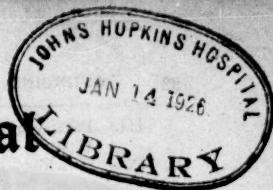


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ORIGINAL ARTICLES

CASES ILLUSTRATING THE INDICATIONS FOR THE USE OF QUINIDINE SULPHATE IN HEART DISORDERS*

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MUCH has been written concerning the results of the use of quinidine sulphate in unselected groups of cardiac cases with auricular fibrillation. Much has been made of the accidents that have resulted from these pioneer investigations. In fact these misfortunes have been so much exaggerated that clinical medicine is in danger of losing the benefit of the use of this valuable drug in selected cases. Many other therapeutic measures have in the past gone through the same history but generally more slowly, at first welcomed as panaceas, soon to fall into disrepute because of their improper use and finally to be resuscitated as valuable methods of treatment when correctly used. So it is with quinidine sulphate which happily has attracted so much attention in all parts of the world that we have been able to learn a great deal about its clinical value and limitations in a very few years. We have much still to learn about the drug but distinct knowledge has already been gained as to its usefulness. Quite rightly its disadvantages have been described widely but unfortunately so overemphasized that most medical men are afraid to use the drug even in those cases in which it is indicated. It seems fitting then that we should illustrate the indications for quinidine by the reports of a few of the cases that we have studied during the past few years.

Quinidine sulphate is often very helpful in preventing paroxysmal auricular fibrillation, no matter what the condition of the heart, when given in daily rations of about 3 or 6 grains in tablet or capsule form once or twice a day, or 2 grains two or three times a day. Patients, who are generally sensitive nervously, who have obtained relief in whole or in part from the very disagreeable paroxysms of fibrillation by the use of quinidine sulphate are very grateful.

Sometimes the drug is also helpful in preventing paroxysms of regular auricular tachycardia. In about half of the cases in which we have so used it there has been distinct relief, but it is less effective than in paroxysmal auricular

fibrillation. In getting rid of extrasystoles or premature beats it has been ineffective in the few cases to whom we have given it.

Finally quinidine sulphate may be of much value in restoring normal rhythm in cases of recently established permanent auricular fibrillation, or of prolonged paroxysmal auricular fibrillation, in whom there is no history of congestive failure, no extensive heart disease—valvular (mitral stenosis, etc.) or otherwise, and no sensitiveness to the drug. After it has been ascertained by a small dose (2 or 3 grains) that the individual is not easily poisoned by the drug—and such poisoning is very rare, it can be given in fairly large dosage by mouth for several days without danger provided the patient remains quiet and under close observation, so that the heart may be examined for normal rhythm or abnormal tachycardia, and toxic symptoms observed, on each occasion before the next dose is due. The toxic symptoms are those of cinchonism. The dose that we have found most effective is 6 grains (0.4 gram) for 5 doses at 2 hour intervals daily until normal rhythm has appeared, toxic symptoms or signs developed, or the treatment continued without effect for a week. Although ambulatory cases may be so treated it is safer to give the drug in these large doses under close observation.

The restoration of normal rhythm in these cases of chronic auricular fibrillation may not only relieve the patient of very disagreeable palpitation, but also enable him to be physically more efficient, partly because of the relief of the symptoms and partly because his circulation is improved. In no sense of course is quinidine sulphate to be used in the treatment of congestive failure or angina pectoris—it is not intended to replace digitalis or the nitrites.

CASE REPORTS

The following illustrative cases are arranged as follows:

- A. Cases in which quinidine sulphate was indicated and the result successful.
 - I. Paroxysmal auricular fibrillation. Cases 1 and 2.
 - II. Paroxysmal tachycardia. Case 3.

*Presented in brief before the American Climatological and Clinical Association, Washington, May 6, 1925.

III. Persistent auricular fibrillation. Cases 4, 5, 6, 7 and 8.

- B. Case in which quinidine sulphate was indicated and incorrectly taken. Case 9.
- C. Doubtful indication. Cases 10 and 11. Successful result. Case 12. Unsuccessful result.
- D. Cases in which quinidine sulphate was contraindicated. Cases 13 and 14.
- E. Case unable to take quinidine sulphate though indicated. Case 15.

A. Cases in which quinidine sulphate was indicated and the result successful. 1. Paroxysmal auricular fibrillation.

CASE 1. Paroxysmal auricular fibrillation.

A. H. Housewife, aged 76.

The patient was first seen February 7, 1923. She gave a history of attacks of palpitation for the previous 5-6 years. The first one lasted one week. In the next two years she had only two attacks, but as she increased her activity they became more frequent and in the six months before she was seen she had had 6 attacks. They lasted for a few hours at a time.

The attacks usually started in the early morning and were associated with rapid irregular heart beat, epigastric pressure sensations, and gaseous eructations. She felt faint during the attack and was relieved by belching gas. Her heart showed absolute arrhythmia and rapid rate on physical examination during one of the attacks.

In her past history there was a story of questionable rheumatic fever, frequent tonsillitis, typhoid fever and influenza. Her gall bladder had been removed shortly after the first attack of palpitation.

Physical examination showed a well developed and nourished old lady. There was well marked arcus senilis, but slight evidence of other peripheral arteriosclerosis. She showed remnants of tonsils which had been obviously infected in the past. Her heart apex was felt in the 5th space 9 cm. to the left of the mid-sternal line, 1 cm. outside the midclavicular line. There was no increase in supracardiac dulness. The heart sounds were of good quality, rhythm regular; no murmurs were heard. The lungs were clear and there was no edema of the extremities. Blood pressure 160 mm. mercury systolic and 90 diastolic. Electrocardiogram showed normal rhythm, rate 75 and a well marked inversion of the T wave in lead II, evidently a digitalis effect.

A diagnosis of arteriosclerotic heart disease with paroxysmal auricular fibrillation was made.

She was given quinidine sulphate gr. vi daily, without digitalis.

November 10, 1923, she was seen again feeling in fine condition. She had taken quinidine in daily doses of gr. ii-gr. vi and had had

absolutely no palpitation. Her pulse was regular at 75.

December 15, 1924, she was again seen and examined; she was feeling very well, having resumed daily rations of quinidine after stopping for a few weeks in October and again in November. On each occasion when she stopped the drug she had a fairly long paroxysm (3-4 hours) of auricular fibrillation. When free from any but the most momentary spells of arrhythmia, always less than ½ hour in duration while on quinidine rations, she feels very fit and is able to do more and enjoy life as she had not done for several years.

CASE 2. Paroxysmal auricular fibrillation.

H. W. Physician, aged 66.

Examined first in 1920. For the previous year short paroxysms of irregular tachycardia lasting a few hours each time had been very disturbing. They occurred especially after exertion or when fatigued, and frequently awakened patient at night. They occurred irregularly, usually once every week or two and during their presence incapacitated the patient who was very much disturbed by them. No other symptoms. No pain, cough, dyspnoea or oedema.

Past history unimportant except for diphtheria, small-pox and typhoid fever years ago.

Physical examination negative except for very slight enlargement of the heart and blood pressure 170 mm. mercury systolic and 100 diastolic. No evidences of failure. Electrocardiogram showed normal rhythm and slightly abnormal left axis deviation.

During 1920 and 1921 the patient was examined during several prostrating attacks of auricular fibrillation. There was never any physical sign of congestive heart failure.

In the fall of 1921 quinidine sulphate in daily rations varying from 3 to 9 grains was begun and has been continued most of the time since (April 1925). During the past year or two it has been observed that the drug may be discontinued for several days immediately after a paroxysm when there is an apparent immunity to an attack, and an extra dose may be taken with benefit under conditions of unusual exertion or fatigue. Also it has been noted that unless these short vacations from the drug are taken it tends to lose its effect somewhat. Also at times it gives a little deafness.

November 27, 1923. Paroxysms of auricular fibrillation have been much reduced in frequency and duration since using the quinidine sulphate. An extra dose or two of the drug taken at the onset of a paroxysm almost invariably results in the cessation of the attack in 2 or 3 hours, when before the use of quinidine the paroxysms rarely lasted less than 12 hours. This patient, critical as to the value of drugs, considers that quinidine sulphate has been a boon to him.

January 18, 1925. He has continued the use of quinidine sulphate with benefit. The paroxysms of auricular fibrillation which still occur now and again are definitely controlled by the drug and are infrequent.

April, 1925. Has spent active months on a trip to Honolulu. No symptoms or signs of heart failure.

II. Paroxysmal Tachycardia

CASE 3. *Paroxysmal tachycardia.* C. T. Canadian teamster. Aged 63.

This patient was first seen in the Cardiac Clinic of the Massachusetts General Hospital February 16th, 1922. His story was that he had had attacks of palpitation associated with rapid heart action for 40 years. They came on an average once a week, day or night, and lasted about 10 hours. These attacks were of sudden onset and at times he had been unable to stand when they began, but he usually worked during an attack. The heart was regular during these spells.

Past history was unimportant.

His occupation was very strenuous and consisted in carrying heavy loads of ice.

Physical examination showed a muscular man weighing 200 lbs. He was partially deaf. His heart was moderately enlarged with regular rhythm, rate 70. Blood pressure 150 mm. mercury systolic and 90 diastolic. Blood Wassermann was negative.

A diagnosis of arteriosclerotic heart disease and paroxysmal tachycardia was made.

He was given quinidine sulphate 6 grains (0.4 gm.) a day. March 23rd, 1922, he returned having had 3 attacks of 1 to 2 hours' duration. He felt decidedly better. Electrocardiogram showed ventricular premature beats, rate 70, marked left axis deviation. He was given quinidine as before. He did not return until January 25th, 1923. He had had no attacks for 3 mos. following the last visit, but had had 5 attacks since the preceding July when he had omitted quinidine. The last one was 2 days before he was seen and lasted 27 hours. Quinidine was again given as before.

March 29, 1923, he reported that he had had only one short attack and was working hard every day.

February 14, 1924. He was seen having had only 3 short paroxysms in 8 months. He was very enthusiastic about quinidine.

October 30, 1924. He returned still feeling very well and continuing his daily quinidine ration of 6 grains (0.4 gm.). He had had no more paroxysms.

April, 1925. Free from paroxysms of tachycardia all winter while on quinidine rations.

This patient after 40 years of suffering from paroxysmal tachycardia found relief in quinidine sulphate at the age of 63.

III. Persistent Auricular Fibrillation

CASE 4. *Persistent auricular fibrillation.*

C. Z. Machinist. Aged 36.

This patient entered the Massachusetts General Hospital January 16, 1922. For the preceding four years he had had dyspnoea on exertion with some palpitation, and had used two pillows at night. Three years before, he was in the hospital for treatment of a syphilitic infection of eight years' duration, and at that time it was found that he had a slight trace of albumen in his urine and an enlarged, rapid heart. Electrocardiogram showed auricular flutter. He improved while in the hospital and was discharged for observation to the Out-Patient Department.

Two months before admission to the hospital the second time he had suddenly grown much more dyspnoic and his heart had begun to pound and beat fast. There was no history of rheumatic fever, chorea or tonsillitis in the past.

Physical examination showed a very obese man weighing 267 lbs. in no respiratory distress. The heart impulse was not seen or felt. The sounds were absolutely irregular, but not rapid. There were no murmurs. The left border of dullness was 13 cm. to the left of the midsternum, 3.5 cm. outside the mid-clavicular line. Blood pressure 165 mm. mercury systolic and 115 diastolic. The lungs were clear and there was no edema.

X-ray of the heart showed a diffuse, general enlargement of the heart shadow. Right border 8.7 cm. from midsternum. Left border 13 cm. Total transverse diameter 21.7 cm. Length 20.2 cm. Base 11.5 cm. Great vessels 8.7 cm. Internal diameter of chest 31.6 cm. The urine was negative. The blood Wassermann was negative.

Electrocardiogram January 17, 1922, showed auricular fibrillation, ventricular rate 100, left ventricular preponderance (Index +26).

A diagnosis of auricular fibrillation of unknown etiology was made.

He was given two test doses of quinidine sulphate, 3 grains (0.2 gm.) each on January 16. On January 18th and 19th he received 6 grains (0.4 gm.) 5 times a day and on the evening of January 19th his heart rhythm was normal, after 66 grains (4.4 gm.) of quinidine.

Electrocardiogram January 20th showed normal rhythm, rate 80, P-R interval 0.2 second, left ventricular preponderance.

He was discharged relieved to the Out-Patient Department on a daily allowance of digitalis leaves, $1\frac{1}{2}$ grains (0.1 gm.), which he continued until December 1922.

His heart has maintained normal rhythm ever since. In May 1924 he took 6 grains (0.4 gm.) of quinidine a day for a week during a period of slight dyspnoea. He was last seen October 16th, 1924, when his heart was perfectly regular at a rate of 60. He was working

every day without symptoms, but weighed 283 lbs. He was put on a diet for reduction of obesity at that time.

CASE 5. Persistent auricular fibrillation.

C. V. Hotel manager. Aged 48.

This patient was first seen September 19th, 1922, at which time he complained of being awakened from sleep a month previously by a feeling of pressure in the left chest, irregular heart beat, palpitation, and gaseous eructations. This attack came on after swimming in cold water, vigorous exercise, and an indigestible supper. Since that time he had had considerable orthopnoea at night alternating with sensations of pressure over the heart. His heart had continued rapid and irregular.

Family history: he thought that all his "mother's people" had dropped dead of apoplexy.

Past history: no rheumatic fever, chorea, tonsillitis, diphtheria or influenza. He had always been a very athletic man.

Physical examination: well developed and nourished; no enlargement of the thyroid gland. Heart: apex impulse maximal in the 6th space $11\frac{1}{2}$ cm. to the left of the midsternum, 3 cm. outside the mid-clavicular line. The rate was very rapid and the rhythm absolutely irregular. There was a short systolic murmur at the apex. There was no evidence of congestive failure. X-ray of the heart gave the following measurements: right border 5 cm. from the midsternum; apex 5th space, 11.5 cm. to the left of the midsternal line; great vessels 7.5 cm. wide.

Electrocardiogram, September 19th, 1922, showed intraventricular block of the right bundle branch type, with auricular fibrillation, ventricular rate 130, occasional ectopic ventricular contractions. Blood Wassermann was negative.

He was admitted to the Hospital the following day and given digitalis $4\frac{1}{2}$ grains 3 times a day for two days, receiving 24 grains (1.6 gm.) in all, with a drop in the ventricular rate from 130 to 80.

On September 22nd, 1922, 6 grains (0.4 gm.) of quinidine sulphate were given at 10 and 12 as test doses.

September 24th and 25th, 6 grains (0.4 gm.) of quinidine were given at 8, 10, 12, 2, and 4 without effect. September 26th, 6 grains (0.4 gm.) were given at 8, 10, and 12. At 1:45 P. M. his heart suddenly became regular after 96 grains (6.4 gm.) of quinidine.

The return to normal rhythm gave the patient great subjective relief. The palpitation disappeared and this removed the most disturbing factor. Electrocardiogram showed normal rhythm with persistence of the intraventricular block. Examination of his heart revealed rather poor sounds but no murmurs. Blood pressure was 140 systolic and 90 diastolic.

He was discharged September 26th, 1922, on a

daily ration of 6 grains (0.4 gm.) of quinidine. September 30th, 1922, he reported, feeling well. The apex impulse of his heart was $9\frac{1}{2}$ cm. to the left in the 4th space. The rate was regular at 80.

He has continued on a daily allowance of 6 grains (0.4 gm.) of quinidine, at times increasing it to 9 grains (0.6 gm.) during periods of nervous strain when he has had premature beats.

His heart has had normal rhythm ever since. When last heard from November 28th, 1924, he said that he felt "100 percent better" and was living at "half speed," though still continuing an active business life.

CASE 6. Persistent auricular fibrillation.

F. M. Shoe-salesman. Aged 43.

This patient was first seen May 8th, 1922. Three years before this he had had an attack of palpitation coming on after overeating, lasting three or four days. This appeared to be due to premature beats. Nine weeks before examination he experienced a sudden onset of irregular tachycardia. This was very tumultuous at first and had persisted, but had been quieted by the use of digitan and digitora. He had been losing weight, sleeping poorly and was very nervous. Palpitation and weakness were his chief complaints. There were no symptoms of cardiac failure. He had not worked for nine weeks.

His past history was negative except for an operation for "fissure" ten years before. He used much tobacco.

Physical examination showed a thin, apprehensive man. The thyroid was negative. Heart: the apex was at the 6th rib 8 cm. to the left of the midsternum, in the midclavicular line. The rhythm was absolutely irregular; apex rate 88, radial rate 84. There was a very loud systolic murmur at the apex with an accentuated first sound; no diastolic murmurs were heard. The blood pressure was 94 mm. mercury systolic and 66 diastolic. The electrocardiogram showed auricular fibrillation, ventricular rate of 90, diphasic T wave in lead 2, no preponderance.

A diagnosis of auricular fibrillation with possible rheumatic heart disease and mitral involvement was made. He was given quinidine sulphate 3 grains (0.2 gm.) for two test doses and told to take 6 grains (0.4 gm.) five times a day for two days.

May 11th, 1922 (3 days later) he reported that after two doses on the previous day, total dose 6 grains (0.4 gm.), his heart became regular and he experienced marked subjective relief. He had continued with the remaining doses. He complained of slight deafness in one ear. Electrocardiogram showed normal rhythm, rate 80. He was told to continue on quinidine, 6 grains (0.4 gm.) daily for two weeks.

May 29th, 1922, he was seen, feeling well.

He had had a few premature beats. No valvular disease was demonstrable. There was a slurring of the first sound at the apex. Quinidine was continued.

September 11th, 1922, he returned, having had a good summer. He had been able to return to work in June. On four occasions he had had attacks of rapid regular heart beat, waking him out of sleep, and lasting 10-15 minutes. No irregularity was noted. There was no change in the heart except for a soft, apical, systolic murmur. Blood pressure 102 mm. mercury systolic and 70 diastolic. Quinidine was reduced to 3 grains a day (0.2 gm.)

October 10th, 1922, quinidine was further limited to 3 grains (0.2 gm.) on Saturdays and Mondays—the hard business days.

November 7th, 1922, quinidine was omitted until the week before Christmas when it was ordered in a dose of 6 grains (0.4 gm.) daily.

From December, 1922, to April, 1924, he used no quinidine. He was then given 6 grains (0.4 gm.) daily for a few days because of fatigue and worry. He was next seen October 13th, 1924. He was feeling very well and appeared in excellent physical condition. His heart was regular, rate 72. He had used only six quinidine tablets in the previous 6 months when he was very tired. He was working every day.

In December, 1924, after a busy day and a hearty supper he was awakened by a very disagreeable irregular rapid thumping of his heart. Auricular fibrillation was found to be present the next day and quinidine sulphate was given again. After four doses of 6 grains each (24 grains or 1.6 grams) normal rhythm was restored with great relief that afternoon.

In April, 1925, this patient was seen again and was in good health, working every day and taking quinidine sulphate only occasionally when he thought auricular fibrillation might be due. He has been extremely grateful for his good health during the past three years.

CASE 7. Persistent auricular fibrillation.

J. K. Irish policeman. Aged 34.

He was admitted to the Massachusetts General Hospital May 28th, 1923, from the Out-Patient Department. Thirteen days before entrance, following a gastro-intestinal upset, he had been seized with abdominal pain, starting near the umbilicus and radiating laterally. This was accompanied by severe dyspnoea. He was almost immediately relieved by sitting down. Since then he had had palpitation, dyspnoea, weakness and repetition of the pain upon exertion. He was unable to work.

His past history was essentially negative. He had never had rheumatic fever or chorea. Occasional sore throat had led to tonsillectomy four years previously. He denied venereal infection. It was disclosed by his wife that he "went on sprees for two or three days quite

often" and felt "terrible" after every one of these.

Physical examination showed a muscular man weighing 220 lbs. His lungs were clear. The liver was palpable and slightly tender and the abdomen moderately tense. There was no oedema of the feet. The heart was enlarged, apex impulse 2 cm. to the left of the nipple in the 5th and 6th spaces, absolutely irregular—apex rate 135, radial rate 90. X-ray of the heart showed the heart shadow enlarged in all diameters, the greatest increase in the region of the auricles. Electrocardiogram May 31st, 1923, showed auricular fibrillation, ventricular rate 100, inverted T wave in lead 2, abnormal left axis deviation. Basal metabolism was normal. The diagnosis was heart disease of unknown cause. The fibrillation was probably initiated by recent alcoholism and excessive use of tobacco.

The patient was digitalized and the apex rate came down to 70 with a pulse deficit of about 10 beats. The digitalis was continued at $1\frac{1}{2}$ grains (0.1 gm.) a day and on June 7th, 1923, he was given quinidine sulphate 6 grains (0.4 gm.); June 8th, quinidine 18 grains (1.2 gms.); June 9-12 quinidine 30 grains (2 gms.) a day. No effect was produced upon the fibrillation and no toxic symptoms were noted.

He was discharged from the hospital, and the quinidine was discontinued. In August, 1923, he was again given a week of quinidine, 2 gms. a day, then the dose was increased to 3 gms. a day for two days and finally to 4 gms. for one day. Normal rhythm was restored on that last day, the electrocardiogram showing a rate of 75 and left axis deviation (index +40).

The quinidine was reduced to 3 grains (0.2 gm.) daily. September 25th, 1923, he was seen feeling finely and working every day. His heart was perfectly regular, rate 72. Blood pressure was 140 systolic and 80 diastolic. X-ray of the heart showed it still enlarged but smaller than at the previous observation.

February 29th, 1924, he was again seen and found in excellent condition. His heart was regular at 64. Quinidine was discontinued.

October 15th, 1924, he reported that he was perfectly well until two months previously when he was struck by an automobile with a resulting septic abrasion of his left leg. Following that he noted skipping of his heart and palpitation. Examination showed the apex impulse of the heart in the 5th space in the mid-clavicular line. The rhythm was absolutely irregular, rate 84; no murmurs were heard.

He was started on quinidine again October 15th, 1924, and two days later reported that on the previous day his heart had again become regular, after a total dose of 36 grains (2.4 gms.). He felt a little dizzy and had some palpitation before the heart rhythm changed but was feeling very well at the time he was examined. Electrocardiogram showed normal rhythm, rate 70.

He was put on a daily allowance of quinidine

sulphate, 6 grains (0.4 gms.) at 2 P. M. and told to continue active duty.

November 7th, 1924. Electrocardiogram showed normal rhythm, rate of 64. No complaints.

April 24th, 1925. He continued the quinidine rations until 3 weeks ago and felt well. Ten days ago he had the "grippe" with fever and malaise and spent two days in bed. Irregular palpitation began again during the illness and had persisted making him feel miserable. Electrocardiogram showed auricular fibrillation with ventricular rate of 100. Quinidine sulphate resumed.

April 28th, 1925. Normal rhythm restored after 4.8 grams of quinidine sulphate in 3 days. He felt finely again.

CASE 8. Persistent auricular fibrillation.

J. C. Physician. Aged 39.

This patient came for examination April 27th, 1920. Two years before, while in the army, he had begun to have attacks of dyspnoea and palpitation, with some dyspnoea on exertion. These attacks had recurred at intervals ever since, particularly in the past 3 months. For the past three days he had been in bed and had taken digitofolin $1\frac{1}{2}$ grains three times a day. He complained chiefly of palpitation and cough.

Nine years before he had had joint pains and "septic sore throat." Three years ago he was operated on for frontal sinusitis but was still troubled with it. He had also had cystitis for a few weeks.

He smoked 20 cigarettes daily and had 3 or 4 alcoholic drinks a day, usually whiskey. He also drank 3 cups of coffee daily.

Physical examination was negative except for his heart. This was not appreciably enlarged. The apex impulse was in the 5th space, in the left nipple line. The rhythm was absolutely irregular, rate 130. No murmurs were heard. Electrocardiogram showed auricular fibrillation with rare ectopic beats.

A provisional diagnosis of rheumatic heart disease was made.

He was put on larger doses of digitalis without much relief, although his apex and radial rates came down to 76.

In March, 1921, because of increasing urinary symptoms and signs his left kidney was removed. Pathological examination demonstrated calculi and tuberculosis. Digitalis was given irregularly until July, 1921. He was then admitted to the Massachusetts General Hospital where he was started on quinidine. After a total dose of 2 grams (30 grains) of quinidine sulphate his heart became regular except for frequent premature beats. He showed great subjective improvement.

Electrocardiogram in October, 1921, showed normal rhythm and no premature beats. X-ray

of the heart before and after quinidine showed no enlargement. In October, 1921, quinidine was discontinued.

From July, 1921, until June, 1924, his heart showed normal rhythm whenever he was seen. His health during this time was not good and he underwent a radical frontal sinus operation in May, 1923. He complained of asthenia and considerable mental depression but his cardiac symptoms were much improved. He reported one paroxysm of fibrillation during the winter of 1923-1924.

In June, 1924, auricular fibrillation recurred. When seen June 30th, 1924, he showed an apex rate of 100. Electrocardiogram showed auricular fibrillation with ventricular rate 120-130. He had taken digitalis himself. Quinidine was recommended and after a total dose of 2.4 grams (36 grains) normal rhythm was restored and was demonstrated by electrocardiogram July 5th, 1924. He was told to continue a daily ration of 6 grains of quinidine sulphate. When last seen, November 20th, 1924, his heart had been regular most of the time since the previous visit. When overtired he would have attacks of irregular heart action. These were sometimes a month apart and at other times would recur at weekly intervals. He had taken quinidine sulphate, 12 grains (0.8 gm.) a day, at such times and this had invariably restored normal rhythm within a few hours. His pulse, at this visit, was regular and he was feeling well.

B. Case in Which Quinidine Sulphate was Indicated and Incorrectly taken.

CASE 9. Persistent auricular fibrillation.

A. J. Machinist. Aged 53.

This patient was admitted to the Massachusetts General Hospital November 28th, 1921, complaining of irregularity of the heart of 4 months' duration. This irregularity had come on after hard work on a hot day. Coincidentally he began to notice weakness and a pain in his right upper abdomen when lying on his right side. He also was troubled by dyspnoea on exertion, persistent palpitation and a dry cough. He was given digitalis by his local doctor and improved so that he returned to work in a few days. He had since developed acute "lumbago" from which he was suffering at entrance.

There was no rheumatic fever, chorea, or tonsillitis in his past history.

Physical examination showed a well developed and nourished man. The chest was emphysematous with a few dry rales. The heart was slightly irregular, not rapid, with sounds of fair quality. There was a systolic murmur loudest at the apex. Blood pressure was 160 systolic and 110 diastolic. There was no edema and the liver edge could not be felt. There was a large left hydrocele. The urine and blood Wassermann were negative.

X-ray of the heart December 9th, 1921, showed right border 5.7 cm. from midsternum, left border 11.6 cm., total transverse diameter 17.3 cm., length 17.6 cm., base 11.3 cm., great vessels 5.3 cm., internal diameter of chest 30 cm.

Electrocardiogram November 29th, 1921, showed auricular fibrillation, ventricular rate 70, inverted T wave in lead 2; left axis deviation (index +37).

A diagnosis of probable cardiosclerosis with auricular fibrillation was made. On November 30th, 1921, he was given quinidine sulphate, 3 grains (0.2 gm.) for two doses and on December 1, 2 and 3 he was given 6 grains five times a day. On December 4th he received 41 grains (2.7 gm.), December 5th 60 grains (4 gm.), December 6th 39 grains (2.6 gm.), December 7th 45 grains (3 gm.), December 8th, 18 grains (1.2 gm.) and 6 grains (0.4 gm.) a day thereafter. At this time large doses of quinidine sulphate were being tried in some cases of the original unselected group of patients at the Massachusetts General Hospital. Mr. J. was one of these cases.

Electrocardiograms were as follows:	Total dose of quinidine
Dec. 3. Auricular fibrillation, ventricular rate 130, diphasic T wave in lead 2. Left axis deviation as before.	96 grains (6.4 gm.) to date.
Dec. 4. Auricular fibrillation (coarse), ventricular rate 95. More inverted T wave in lead 2.	127 grains (8.5 gm.).
Dec. 5. Same, rate 100. Diphasic T wave in lead 2.	187 grains (12.5 gm.).
Dec. 6. Auricular flutter, auricular rate 230, ventricular rate 105. 2:1 block much of the time.	226 grains (15 gm.).
Dec. 7. Auricular fibrillation (coarse), ventricular rate 120. Variations in ventricular complexes in lead 2. T wave in lead 2 slightly diphasic.	251 grains (16.7 gm.).
Dec. 7. Normal rhythm, rate 85. Delayed conduction: P-R interval = .22 second. T wave in lead 2 upright.	271 grains (18 gm.).
Dec. 9. Normal rhythm, rate 75. P-R interval = .2 second. T wave in lead 2 slightly diphasic.	

After return to normal rhythm he was operated on for hydrocele and discharged much improved to the Out-Patient Department. His heart remained regular from December, 1921, until March, 1924, except for occasional attacks

of palpitation lasting a few minutes. He took quinidine, 3 grains (0.2 gm.) twice a day for 2 months during this period. In March, 1924, however, he had pneumonia and his heart became again irregular. While convalescing, not under observation of our clinic, he took 8 tablets of quinidine, 3 grains (0.2 gm.) each, in one day and normal rhythm was reestablished. But he became nauseated on the following day and the irregularity recurred.

He came under observation again May 15th, 1924, at which time his heart was absolutely irregular, rate 110. He was given digitalis leaves $1\frac{1}{2}$ grains (0.1 gm.) three times a day for three days, then quinidine sulphate 6 grains (0.4 gm.) four times a day for three days.

On May 20th, 1924, he was again seen. Examination showed his heart to be absolutely irregular, rate 90. He was told to take quinidine 30 grains (2 gm.) a day and to remain quiet while taking it.

About November 1st he reported by letter that he was feeling fairly well but was too busy to return to the clinic.

December 3rd, 1924, a letter from his wife said that he had died suddenly November 9th. A fuller report from his wife stated that he had not started quinidine again until November 8th, when he took 42 grains (2.8 gm.). On November 9th he took 36 grains (2.4 gm.). His pulse on that day was irregular at 83. The last tablets were taken at 6 P. M. At about 8:30 P. M. he was found lying on the floor of his barn and he died in 15 to 20 minutes. During the previous three days he had worked harder than he had for years on his farm, and was warned by his wife that he was overexerting himself.

The excessive amount of quinidine (more than was ordered) and the strenuous exercise were doubtless factors leading to his death. It is not known whether or not his heart was regular when he died. This case illustrates the importance of keeping the patient quiet in bed, under close observation while giving the quinidine in large doses.

C. Doubtful Indication

CASE 10. Persistent auricular fibrillation. Hyperthyroidism. History of congestive failure. Successful result.

O. G. Electrician. Aged 29.

Admitted to the Massachusetts General Hospital June 21st, 1924, with a history of four years of swelling in the neck, nervousness, protrusion of the eyeballs, excessive perspiration, and loss of weight. The onset followed an experience of shipwreck. For the past two years he had noticed dyspnoea on moderate exertion and increasing fatigue and said his heart would often "skip and jump." A year before entrance he had been in bed for 5 weeks and had been given a diuretic (? digitalis) which lessened the swelling of legs, abdomen and scrotum.

His past history was unimportant. On entrance he showed an enlarged thyroid gland, with systolic thrill and bruit, warm moist skin, exophthalmos and fine tremor of the extended fingers. The heart was enlarged and showed by X-ray an increase in the transverse diameter with some prominence in the region of the auricles and increase of the supracardiac width. Measurements were as follows: right border 7 cm. from midsternum; left border 11 cm.; total transverse diameter 18 cm.; length 16.5 cm.; base 15 cm.; great vessels 10 cm.; internal diameter of the chest 29.5 cm. The rhythm was absolutely irregular, apex rate 100, sounds of good quality, with a blowing precordial systolic murmur, loudest at the base. There was moderate edema of legs and abdomen. Urine, blood smear, and blood Wassermann were negative.

BASAL METABOLISM

1924

Jan. 28 +78% pulse 89
June 24 +37% pulse 74
June 25 +20% pulse 72
July 1 +19% pulse 60
July 11 +11% pulse 50 (after operation).

Electrocardiogram on June 23rd, 1924, showed auricular fibrillation, ventricular rate 70. The diagnosis was hyperthyroidism with congestive failure of thyrotoxic myocardial origin. The patient was given Lugol's solution, 15 minims a day, before and after operation. On July 3rd, 1924, subtotal thyroidectomy was done under gas-oxygen anesthesia, and he reacted well; pulse rate of 85, but the auricles were still fibrillating.

After rest at a convalescent home he returned to the Out-Patient Department July 31st, 1924. He was feeling well except for palpitation and his pulse was still absolutely irregular, varying from 68-100. There was no congestive failure. It seemed probable that the good effects of the operation had attained their maximal result without restoring normal rhythm in the interval of four weeks. He was given quinidine sulphate 3 grains (0.2 gm.) twice on August 1, then 30 grains (2 gm.) a day. On August 6th it was found that the pulse was regular after 150 grains (10.2 gm.) of quinidine. Electrocardiogram the following day showed normal rhythm, rate 100. He was put on a daily allowance of quinidine 6 grains (0.4 gm.) and his pulse was regular when seen five weeks later.

This case was evidently much helped by the quinidine although the previous history of slight to moderate congestive failure made the indications for the use of quinidine sulphate somewhat doubtful.

CASE 11. Persistent auricular fibrillation. Slight to moderate mitral stenosis. Successful result.

F. W. Physician. Aged 46.

This patient was first seen August 8th, 1921, at which time he gave a history of short attacks of paroxysmal tachycardia for nine months. Ten weeks before he came for examination palpitation and absolute cardiac arrhythmia had started and had continued ever since. Three days after the onset he began taking 30 to 40 minims of digitalis tincture 2 to 4 times a day.

He had been unable to work and had been in bed for seven weeks, but had been up and around for the last two or three weeks. There had been very slight cough but no dyspnoea. His main difficulties were palpitation, weakness and the loss of 20 lbs. of weight.

His past history revealed a story of rheumatic fever 23 years before, when he was in bed for three or four weeks. He had had scarlet fever and diphtheria in childhood.

Physical examination showed a well developed and nourished man in no great discomfort. Heart: the apex impulse was in the 5th space 10 cm. to the left of the midsternal line. The borders of dullness were 4 cm. to the right and 11 cm. to the left. The apex rate was 124, radial rate 90. The rhythm was absolutely irregular. In the recumbent position there was a loud first sound with a systolic murmur and a short mid-diastolic rumble at the apex. The lungs were clear and there was no oedema. Electrocardiogram showed auricular fibrillation, ventricular rate 110.

A diagnosis of rheumatic heart disease with mitral stenosis and auricular fibrillation was made.

He was given digitalis as needed to keep his apex rate at 70 to 80.

December 19th, 1921, he returned, having been at work for two and a half weeks. His heart was still irregular and he was always conscious of distressing palpitation. The apex rate was 100. The findings were essentially as before. Blood pressure 120 mm. mercury systolic and 75 diastolic. Electrocardiogram showed auricular fibrillation, ventricular rate 105.

He was given quinidine sulphate, 3 grains (0.2 gm.) at 2 and 4 P. M., December 20th, and was told to take 6 grains (0.4 gm.) 5 times a day for six days, while remaining quiet.

December 27th, 1921, he reported that normal rhythm had been restored December 24th, after 2.4 grams of quinidine. The heart was regular by electrocardiogram. Mitral diastolic and presystolic murmurs were easily heard after exercise. There were occasional premature beats. Quinidine was continued, 3 grains (0.2 gm.) twice daily. This was reduced to 1½ grains (0.1 gm.) January 25th, 1922, and omitted February 15th, 1922. He was advised to take quinidine when his heart showed irritability.

On October 10th, 1924, he reported that he had had no fibrillation but at times showers of premature beats. He was on a daily ration of quinidine, 2 grains, (0.12 gm.) after breakfast

and $2\frac{1}{2}$ grains (0.15 gm.) after lunch. He was doing a considerable amount of work and feeling very well.

Although this physician had slight to moderate mitral stenosis his restoration to normal cardiac rhythm was attended by great relief symptomatically, without accidents.

CASE 12. Persistent auricular fibrillation of long standing. Unsuccessful result.

S. M. Engineer. Aged 62.

This patient was first seen November 9th, 1923. He had very few subjective complaints but was definitely handicapped by easy fatigue and palpitation. Five years before he had had influenza and his heart had become irregular at that time. An electrocardiogram taken then showed auricular fibrillation. The irregularity had persisted ever since and had been controlled by digitalis. This drug had given him gastro-intestinal disturbance at times and he had not taken it regularly.

His past history was unimportant except for frequent sore throats. Tonsillectomy had been performed a year before. He had had periods of tachycardia for several years prior to the onset of the fibrillation, and 33 years ago his heart had been considered "suspicious" at an insurance examination.

One of his children had died of rheumatic heart disease.

Physical examination showed a well developed and nourished man with moderate arcus senilis but otherwise slight evidence of arteriosclerosis. There were no signs of congestive failure. The thyroid gland was not enlarged and there was no exophthalmos. His heart showed an apex impulse maximal in the 5th space $9\frac{1}{2}$ cm. to the left of the midsternum, $\frac{1}{2}$ cm. beyond the midclavicular line. There was no increase in supracardiac dullness. Both heart sounds were doubled. There were no murmurs or thrills. The rhythm was absolutely irregular, with a rate of 95. Blood pressure (average) 130 mm. mercury systolic and 80 diastolic. Electrocardiogram showed auricular fibrillation, rather fine in type, slight right axis deviation, ventricular rate 95-100. A diagnosis of probable arteriosclerotic heart disease was made.

It was decided to try the effect of quinidine as there was no congestive failure and no mitral stenosis or history of embolism.

He was given two test doses of quinidine 3 grains each (0.2 gm.) and in 6 days received a total of 120 grains (8 gm.). The heart remained absolutely irregular in rhythm, though the rate increased to 120, probably due to the omission of digitalis. There were no toxic symptoms. Daily electrocardiograms showed no change in the character of the fibrillation, but toward the end of the course a few ectopic ventricular beats appeared.

Following the test he was again digitalized,

and he has continued on a daily allowance of digitalis, $1\frac{1}{2}$ grains (0.1 gm.), feeling fairly well and able to carry on his work but avoiding much exertion.

The failure to restore normal rhythm in this case may be blamed on the chronicity of the auricular fibrillation although similar cases do sometimes react favorably without accident. A further trial might prove successful, but it must be realized that there is undoubtedly a very slight risk from embolism in chronic cases.

D. Cases in which Quinidine Sulphate was Contraindicated

CASE 13. Persistent auricular fibrillation. Extensive heart disease. Temporary success.

J. S. Polish schoolboy. Aged 10.

This patient came under observation in the Out-Patient Department of the Massachusetts General Hospital, October 17, 1923. He had had diphtheria at the age of 4 and rheumatic fever at 5 (March, 1920). In December, 1920, he was in another hospital with cough, fever and nosebleed, and in May, 1922, during a recurrence of fever, cough and hemoptysis, his local physician had said he had "heart trouble." When he was seen in the Out-Patient Department a diagnosis of rheumatic heart disease with mitral stenosis was made.

He was followed through the winter of 1923-1924, at which time he had recurrent joint pains and sore throat with fever. On April 9th, 1924, his tonsils were found large and ragged with enlargement of the cervical glands and a temperature of 102.5° . The apex impulse of the heart was forceful in the 5th space 7 cm. to the left of the midsternal line and 1 cm. outside the midclavicular line. There was normal rhythm with a rate of 105. A marked mitral diastolic rumble was heard at the apex and a moderate blowing diastolic murmur along the left sternal border. He was admitted to the hospital with a diagnosis of rheumatic heart disease with mitral regurgitation and stenosis, aortic regurgitation, chronic tonsillitis and a question of acute endocarditis. Tonsillectomy was performed at this time and he was discharged under Social Service supervision April 25th, 1924.

On May 17th, 1924, he was readmitted to the hospital because of a gastro-intestinal upset during which his heart became irregular and his temperature dropped to 96° . On entrance he showed evidence of pulmonary congestion, and his heart rhythm was absolutely irregular. Electrocardiogram confirmed the diagnosis of auricular fibrillation, ventricular rate 150. He was digitalized in 3 days with $13\frac{1}{2}$ grains of digifoline but it was found necessary to give him 3 to $4\frac{1}{2}$ grains (0.2-0.3 gm.) a day to maintain digitalization.

He then received 12 grains (0.8 gram) of quinidine sulphate a day for 6 days without effect upon the auricular fibrillation. The

dose was gradually increased to 44 grains (2.8 gm.) a day and normal rhythm was restored. He received 270½ grains of quinidine (18 gm.) in 14 days but had no symptoms of cinchonism. He was discharged on a maintenance dose of 6 grains (0.4 gm.) a day.

February 7th, 1925, he was again admitted to the hospital having had recurrent rheumatic pains for a month and a recent respiratory infection. Examination of the heart showed a relapse to auricular fibrillation which had come on at some time during the previous week.

Because of the severe and prolonged cardiac damage in this case and large dosage of the drug needed on the previous occasion he was considered an unsuitable subject for further quinidine therapy. Digitalis was again given to him and a satisfactory result obtained in 5 days with a total dose of about 15 grains (1 gm.). The apex rate dropped from 140 to 55. He was discharged relieved March 30th, 1925, on a maintenance dose of 1¼ grains of digitalis a day.

Quinidine sulphate is contraindicated in a case like this because of the very extensive heart disease with some congestive failure, because of the very large dosage of quinidine sulphate needed to restore normal rhythm, and because of the likelihood of relapse.

Incidentally this case is one of the very youngest ever recorded with auricular fibrillation.

CASE 14. Persistent auricular fibrillation. Mitral stenosis marked. Congestive failure.

C. F. Italian housewife. Aged 30.

This patient entered the Massachusetts General Hospital September 16th, 1921, having had symptoms of congestive failure for 6 months, with dyspnoea, cough, cyanosis, enlarged liver, and irregular heart action.

There was no rheumatic history or story of tonsillitis, but she had had scarlet fever at the age of 7. She had one child living and well that was born 2 months prematurely.

Her physical examination showed cyanosis of the mucous membranes, slight icterus of the skin, orthopnea, and enlarged liver (3 cm. below the costal margin). The lungs were clear and there was no oedema of the legs at entrance as there had been previously. The heart was enlarged, the maximal apex impulse being in the fifth space 12 cm. to the left of the midsternum. The rhythm was absolutely irregular and the sounds of poor quality. Apex rate 120, radial rate 70. The murmurs were typical of mitral stenosis and regurgitation.

The urine showed constantly a trace of albumin. Renal function 10%. Blood Wassermann negative. Temperature normal or subnormal. Electrocardiogram September 19th, 1921, showed auricular fibrillation, ventricular rate 140, flat T wave in lead 2. A diagnosis of rheumatic heart disease with mitral stenosis and regurgitation was made.

She reacted badly to rest in bed. Digitalis had been given to her before entrance. It was started again September 18th but 9 grains caused vomiting. September 20th and 21st she was given a total dose of 36 grains (2.4 gm.) of quinidine sulphate. Electrocardiogram September 22nd showed that she had developed auricular flutter, with a ventricular rate of 180 and intraventricular block of the left bundle branch type. She complained of much abdominal pain and was subjectively worse. Quinidine sulphate was discontinued. Electrocardiograms September 23rd and 24th showed a return to auricular fibrillation with disappearance of the bundle branch block.

Digitalis 4½ grains (0.3 gm.) a day was given to her but she developed edema of the legs and ascites. The digitalis was then increased to 9 grains (0.6 gm.) a day for 2-3 days and she improved somewhat. October 6th, 1921, she was given 30 grains (2 gm.) of quinidine, after omission of the digitalis, and the next day her heart was regular with a rate of 80. But the following day the rate rose to 140, with regular rhythm, probably flutter. She was still jaundiced, edematous, and dyspneic.

She did not react well to more digitalis, the fibrillation recurred and she went steadily downhill. The edema extended even to her hands and she developed pneumonic areas at the bases of her lungs. She died October 14, 1921.

E. Case Unable to Take Quinidine Sulphate Though Indicated

CASE 15. Paroxysmal auricular tachycardia (flutter). Cinchonism.

F. P. Nurse. Aged 48.

First examined at the Massachusetts General Hospital November, 1914, when a diagnosis was made of paroxysmal tachycardia or auricular flutter of unknown origin. For ten years she has remained under observation, much improved by removal of a right cervical rib in 1915, and when there was an increase again of the paroxysms of tachycardia the left cervical rib was removed in 1923, also with improvement. At the time of the recurrence of the attacks of rapid heart action which lasted days at a time in 1922 quinidine sulphate was tried. This, however, resulted invariably in toxic symptoms and signs of cinchonism even in small doses (2 or 3 grains) and it was not possible to determine satisfactorily whether or not the drug had any effect on the abnormal heart rhythm. Angioneurotic oedema, headache and difficulty in breathing were caused by the quinidine and it had to be discontinued.

SUMMARY

Fifteen cases are described in some detail to illustrate the indications in particular, and also the contraindications, for the use of quinidine sulphate in disorders of the heart. When given carefully in suitable cases it is a valuable drug and should not be neglected.

THE SEASON OF 1924 ON THE BOSTON FLOATING HOSPITAL

Case Reports by Members of the Staff

COMPILED BY LAWRENCE W. SMITH, RESIDENT PHYSICIAN

DURING the summer of 1924 a number of unusual cases was referred to The Boston Floating Hospital. These are of sufficient interest to warrant reporting them. Some of them illustrate the difficulties of diagnosis; others the difficulty of treatment. It is purposed to present such a report annually if it meets with sufficient encouragement.

CASE I. Muriel C. Age 2 months. Hosp. No. 4592.

Service of Dr. Lewis Webb Hill.

Family History: The father and mother, one brother and two sisters are living and well. The mother had one miscarriage three years ago. There has been no known exposure to tuberculosis or infectious diseases.

Past History: The baby was born by a normal delivery at full term of normal parents. The birth weight was 8½ pounds. She was cyanotic at birth but breathed about two minutes afterwards. The baby has been breast fed entirely. She has never had a cold or upper respiratory tract infection until the present illness. The digestion has been satisfactory, with three or four normal stools a day. Ever since birth there has been a history of intermittent attacks of cyanosis.

Present Illness: A week before admission baby developed a cold with a cough. There was considerable mucus secretion which seemed to choke her and she was unable to raise it. She has had difficulty with nursing because of this mucus. The cyanosis had been more apparent and persistent since the onset of this illness. She was referred to this hospital with a diagnosis of bronchopneumonia.

Notes: The patient was admitted at 8:45 a. m. and died at 10:15 a. m. There was no time to make a very complete examination of the patient. Several members of the Staff listened to the chest but did not arrive at any definite diagnosis. The only positive finding was dullness in the right chest anteriorly. This was most marked at about the level of the third rib. Posteriorly no dullness was found. No murmurs of the heart could be detected. The baby received no medication and no laboratory examinations were done. The temperature on admission was subnormal (96 degrees) and external heat was applied. Various suggestions as to differential diagnosis were offered including congenital atelectasis, congenital heart disease, diaphragmatic hernia, or some mediastinal tumor.

Post Mortem Examination: Body is that of a well developed and well nourished infant of about three months of age. There is extreme cyanosis of the entire body. Externally the

findings otherwise are negative. The peritoneal cavity and abdominal viscera are entirely negative except for marked congestion. The mediastinum presents no evidence of tumor formation, and the thymus is normal in appearance and weighs only 3 grams. The entire pathology is restricted to the heart and lungs. The heart is fully twice its normal size and presents a complete transposition with the apex appearing in the 7th interspace on the right side two c.m. outside the anterior axillary line. The transverse diameter of the heart is 8 c.m. Careful dissection following fixation presents evidence of all four of the common congenital defects including a completely patent interauricular foramen, a partially patent interventricular septum, an almost complete stenosis of the pulmonic valve, and a widely dilated ductus arteriosus. The lungs present partial atelectasis of the posterior margin of the lower lobe and practically complete atelectasis of the middle lobe of the right lung. There is also partial atelectasis of the apex of the upper lobe on the right side due apparently to the cardiac hypertrophy and displacement. On the left side there is one small area of partial atelectasis in the left inferior posterior border of the lower lobe.

Discussion: This case represents one illustrating the difficulties of diagnosis. The patient was in the hospital too short a time and was too acutely sick to permit a satisfactory physical examination. On the basis of the history of intermittent cyanosis from birth the question of a differential diagnosis between congenital heart disease, enlarged thymus, or some other mediastinal condition, was raised. The intermittent character of the cyanosis more strongly suggested a thymic origin and the physician who referred the case was also of this opinion as he stated that he had never heard any heart murmur. The acute upper respiratory infection which was the immediate cause of referring the child to the hospital was apparently sufficient to overcome its diminished vitality.

The physical findings on admission suggested either a severe bronchopneumonia or congenital atelectasis. None of the Staff who listened to the chest was able to hear any murmurs and for this reason a diagnosis of congenital heart disease was felt doubtful. The autopsy findings emphasized the fact, which is so generally unrecognized, that congenital cardiac lesions may be present without any demonstrable murmur. This is particularly true, as Dr. Maude Abbott has brought out in her admirable paper on Congenital Heart Disease, when the two sides of the heart are uniformly enlarged and

the contraction is simultaneous. Under these conditions the two opposing blood streams counteract one another and practically form a wall so that very little blood passes from one side of the heart to the other, and, accordingly, no heart sounds are heard. The presence of the atelectasis served to confuse the presence of a true dextro-cardia and again brings out the extreme care which is necessary in the physical examination. Even an X-Ray examination of such a chest might easily result in confusion as far as a differential diagnosis between pneumonia or an atelectasis is concerned, and if the atelectasis is of sufficient degree to cover the heart shadow even the dextro-cardia might escape notice. This case serves as a particularly good example of the difficulties of diagnosis in diseases of the thorax in infancy.

CASE II. Mary D. Age 15 months. Hosp. No. 4386.

Service of Dr. Hyman Green.

Family History: The mother is living and well. The father has deserted the family but as far as is known is living. There are two other children, 3 and 4 years old respectively, one of whom is in another hospital being treated for tuberculosis of the skin.

Past History: The baby was full term, normally delivered, and was breast fed for three months. Birth weight was 7 pounds. The nutritional history has not been satisfactory since bottle feeding was begun, in spite of having been under careful observation.

Present Illness: The baby is admitted with the chief complaint of failure to gain during the past 9 months. She has never made any effort to stand or walk and has not attempted to speak. Her mental development appears to have been normal.

Physical Examination: There is fair development of the bony skeleton but very marked malnutrition is present. The baby is very pale; the head is somewhat square, and presents a widely patent anterior fontanel and prominent parietal and frontal bosses. No craniotabes are felt. There is moderate enlargement of the epiphyses and definite beading of the ribs. There are no teeth. There is an old chronic otitis media on the left with perforation of the membrane. There is moderate enlargement of all the lymph nodes but particularly of the cervical on the left side. The heart findings are negative. Examination of the lungs reveals an area of impaired resonance over the left upper lobe, accompanied by a slight increase in the breath sounds. The abdomen is prominent with a spleen which is palpable 5 c.m. below the costal margin. The liver is also felt just below the ribs. The knee jerks are exaggerated but equal. No other abnormal neurological findings are encountered. There is a deformity of the left leg due to a swelling about the size of a walnut at about the middle

of the tibia over its anterior surface. This is not reddened and does not feel hot on palpation. The skin appears normal over it. The mass is quite freely movable, does not appear to be definitely attached to the bone and is somewhat fluctuant. There is a slight suggestion of tenderness on deep pressure.

Progress Notes: This baby was admitted the 27th of June and was put on a formula of lactic acid milk with Karo Corn Syrup. In 10 days she had gained 200 grams. The Laboratory findings assisted materially in arriving at a definite diagnosis. There was a very strongly positive tuberculin reaction. The blood findings showed a leucocyte count of 18,000, with 65% lymphocytes, 9% large mononuclears, and 26% polymorphonuclears. The red count was normal and the hemoglobin by Sahli gave 70%. The sputum was examined several times for tubercle bacilli and none were found. The Wassermann reaction was negative. X-Ray examination of the chest was made and a presumptive diagnosis of tuberculosis given. X-Ray studies of the bones revealed a chronic osteomyelitis of the left tibia in relation to the tumor mass noted on physical examination. In addition unsuspected lesions of the left radius and right humerus were found. These lesions involving the shaft of the bones are of an unusual type in this locality and suggest a bovine type of tuberculosis. Following X-Ray examination of the tibia aspiration of the mass was performed and about 3 c.c. of blood tinged fluid containing coarse flecks of fibrin was obtained. Smears of this material were negative. It was injected sterily into both a rabbit and a guinea pig for confirmation of the diagnosis.

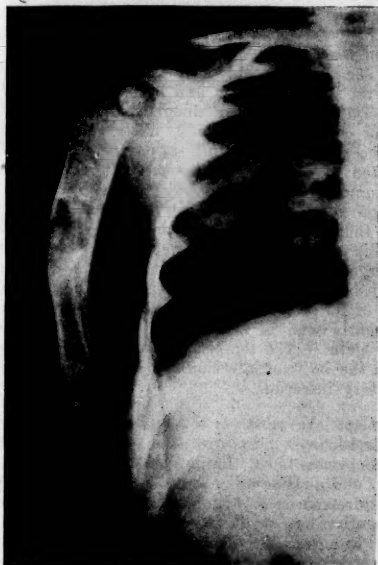
Two weeks following admission the baby suddenly developed an acute inflammation of the right eye involving both the conjunctiva and iris. This was treated locally with argyrol and for several days showed a marked improvement. The lesion, however, extended and a definite iritis developed during the course of the following week. She was seen in consultation by Dr. Ralph A. Hatch. An attempt was made to dilate the pupil to prevent adhesions but without success and a secondary glaucoma developed of a rather acute type. On this account the baby was transferred to the Massachusetts Eye and Ear Infirmary. During the month on the boat in spite of the multiple lesions she showed a gain in weight of over 800 grams and her general condition seemed improved. The prognosis at this time did not seem very good as it seemed to be a rather severe case of diffuse tuberculosis. Subsequent examination of the inoculated animals confirmed the diagnosis of tuberculosis of the bovine type.

Discussion: This case is of interest chiefly because of the comparative rarity of shaft tuberculosis of the bones in this country. It is a case very typical of the bovine tuberculosis

found in Scotland, particularly around Edinburgh, and which is reported very widely in the English and Continental medical journals. The case offered considerable difficulty in diagnosis. The general condition of the child on admission did not definitely suggest tuberculosis. The deformity over the left tibia was seen by several members of the Staff who were divided in their opinion as to whether it represented a cold abscess or a tumor, presumably a fibro-lipoma. The chest dullness on examination was compatible with the diagnosis of a simple pneumonia. This was borne out to a certain extent by a comparatively high white count. The differential count, however, showed a marked

Bone and Joint Surgery by Dr. Charles R. Brown of the Boston Children's Hospital.

Subsequent Report: Examination of this baby seven months later shows a very definite improvement in her general condition and marked evidence by X-Ray examination of repair of the bone lesions. The prognosis apparently is perfectly good under intensive ultra violet or heliotherapeutic treatment. The



Note typical combined osteolytic and proliferative reaction of the shaft of the bone.

preponderance of mononuclear cells which argued very strongly against a pyogenic infection and supported a diagnosis of tuberculosis. Considerable doubt was thrown upon the validity of the diagnosis of tuberculous iritis and keratitis and a syphilitic etiology was argued. In view of the negative Wassermann and the presence of such general tuberculosis, however, it seemed reasonable to conclude that the lesions of the eye were also of a tuberculous nature. The chief interest in this case centers about the bone lesions. We were fortunate in securing positive evidence by the injection of the aspirated material into experimental animals that the lesions were tuberculous. A review of the pathology of this type of tuberculosis was reported last year in the *Journal of*

baby is being carefully followed through the coöperation of the Blind Babies Nursery.

CASE III. Anna C. Age 15 months. Hosp. No. 4594.

Service of Dr. Lewis Webb Hill.

Family History is unimportant.

Past History is irrelevant.

Present History: Four days before admission the child developed an acute diarrhea of about 8 green, watery, foul stools per day. She lost her appetite and started vomiting everything she ate. The vomitus according to the father was not projectile and was sour smelling resembling curdled milk. The father never noticed any blood or mucus in either vomitus or the stool. She was brought to the Hospital

by the father because of a high fever which developed 24 hours before admission.

Physical Examination: The only positive findings were a marked dehydration with loss of tone of the skin which appeared dry and flabby. There was moderate enlargement and injection of the tonsils accompanied by increase in size of the cervical lymph nodes. There was a very marked pallor of the mucus membranes and skin. At the time of the admission examination a large amount of dark brown coffee ground vomitus rose into the mouth. The father said this was the first time that this type of vomiting had occurred.

Progress Notes: The temperature on admission was 103.3 with respirations of 47 per minute and a pulse of 150. On the first day there were four stools tarry in appearance and consistency, and coffee ground vomitus was expelled after each feeding. She was given a subcutaneous infusion of 240 c.c. of salt solution and 10 minims of paregoric every three hours by mouth, in an attempt to reduce the restlessness and the number of stools. The next day the stools were reduced to one in number but it still had the same tarry consistency. The abdomen was markedly distended and she vomited almost all her feedings. Three days later another infusion of 240 c.c. of saline was given, and 50 c.c. of horse serum administered with the object in view of attempting to reduce the bleeding. The temperature slowly fell to normal during the course of ten days, and this was accompanied by a corresponding fall in the pulse and respiration rates.

Laboratory Data: The blood findings were those of an acute secondary anemia, with a red cell count of 3,800,000 per cu. m.m. The hemoglobin as determined by Sahli's method was 42%. The blood platelets were normal, being over 300,000. Typhoid agglutination of the blood serum was negative. Blood cultures were negative. The Von Pirquet skin reaction and the Wasserman test were both negative.

Subsequent Notes: The child's condition gradually improved; the color of the stools became normal, and vomiting ceased on a fat free lactic acid milk formula, which was changed to a whole milk modification before discharge. A positive diagnosis was never made, but the possibilities of the following differential diagnosis were suggested: gastric or duodenal ulceration with hemorrhage, typhoid fever with intestinal ulceration, Henoch's or hemorrhagic purpura, Meckel's diverticulum, or simply hemorrhage associated with some upper respiratory tract infection. The patient was transferred to another hospital on the closing of the boat.

Discussion: This case on admission presented considerable difficulty in diagnosis and even after the complete examination of the patient both clinically and from the Laboratory point of view on absolute conclusions could be drawn. The child was obviously acutely ill,

with a severe anemia due to hemorrhage from the gastro-intestinal tract which was still active. The possible diagnoses have been mentioned. The most likely of these was considered to be probably a purpura of Henoch's type. However, the absence of skin petechiae, the normal platelet count, the normal coagulation and clotting times, argued strongly against this diagnosis. The possibility of some acute gastro-intestinal disease with a diffuse ileocolitis either with or without actual ulceration was also considered as a very probable diagnosis. The negative Widal and the blood picture excluded typhoid fever as a possibility, and the history was very unlike the onset of this disease. In a similar way bacillary dysentery seemed to be ruled out also on the basis of negative stool cultures and negative agglutination reactions.

The bleeding obviously came from high up in the intestinal tract and by elimination a presumptive diagnosis of duodenal or pyloric ulcer was considered the most likely, although the subsequent history of apparently uncomplicated recovery argues somewhat against this diagnosis. Unfortunately X-Ray studies to confirm this diagnosis were impossible because of the acute condition of the child. The diagnosis of Meckel's diverticulum is so difficult without roentgenological studies that nothing can be definitely said in respect to the possibility of its presence. Duodenal ulcer is not infrequently seen in infants and has been reported at birth. The temperature could be explained on the basis of a secondary acute upper respiratory infection.

CASE IV. Ruth G. Age 21 months. Hosp. No. 4396.

Service of Dr. Paul Waldo Emerson.

Family History: The baby is one of two children in a Jewish family whose history is negative.

Past History: The baby was born at full term and normally delivered. She was nursed for fourteen months and since that time has had a stormy feeding history. She had whooping cough at nine months of age but no other diseases.

Present Illness: The chief complaint on admission was diarrhea and failure to gain during the past three months. Stools averaged five a day and were yellowish in color, watery in consistency, with many sour curds. She has complained of distension and vomiting during this interval. Three months before admission the child was in the Boston City Hospital for one week, at which time a diagnosis of Henoch's Purpura was made. Their records state that the child had been perfectly well until five days previous to admission, at which time cough and fever developed. On the following day petechiae appeared on the left buttock. Subsequently petechiae developed on both legs. She re-

ceived two transfusions at the City Hospital and was discharged improved.

Physical Examination: The positive findings on admission were chiefly those of marked emaciation with more or less acute dehydration. The cheeks were flushed, the skin dry and hanging in folds over the extremities and face. Over the dorsal surfaces of the fingers and hands, extending as far as the wrists, was an unusual yellowish brown pigmentation of the skin. No superficial changes in the epidermis were noted. The picture was strongly suggestive of a typical case of chronic intestinal indigestion.

Progress Notes: The Laboratory findings can be summarized in the following statements: the blood was examined at intervals and no particular variation from normal was found, either in the number of the red or white cells or in the differential count. The Wassermann reaction was negative. The Schick test and intradermal tuberculin reaction (1-500) were negative. The urine was at all times normal. The stools were exceedingly foul and watery but gradually improved under treatment.

6-27-24. Admission weight of the child was 6440 grams. She was placed on a formula of fat-free lactic acid milk. During the course of the next week dia-protein muffins, half of a hard-boiled egg yolk, cottage cheese, and junket made from fat-free milk were added to the diet. Prune juice was given in small amounts for its iron content chiefly. The feedings were poorly taken and required forcing on several occasions. For this reason it was changed temporarily to Eiweiss milk in the hope that it would be taken more readily.

7-6-24. The addition of even the small amount of fat in Eiweiss milk produced an increase in the number of stools and the formula was again changed back to fat-free lactic acid milk. During the course of the next two to three weeks the patient began to refuse food and it became necessary to give daily saline infusions and gavage feedings. Even by this treatment there was a constant loss in weight reaching 6250 grams.

8-1-24. About this time a definite improvement in the child's condition was noted. She began to ask for food. Her disposition improved. She began to be interested in her surroundings and to play happily. From that time on constant and progressive improvement was noted in her general appearance and mental attitude. The weight increased from 6400 grams to 7420 grams. The stools slowly improved but varied considerably day by day, at times showing a tendency towards constipation and at other times being decidedly watery. No vomiting occurred after the improvement definitely began. It was interesting to note that the pigmentation of the skin of the hands began to disappear at about this same time.

Subsequent Notes: On the closing of the boat season the patient was discharged to the

"On Shore" clinic where she has been followed during the past five months with a progressive improvement due very largely to the coöperation of the mother in maintaining a very strict supervision of the diet.

Discussion: This case represents a fairly typical history of chronic intestinal indigestion, in this particular instance complicated apparently by a rather marked anemia associated with purpuric symptoms. It further illustrates the difficulty of treatment as carried out in private practice as it took over five weeks before the slightest improvement was noted. In private practice such an interval would see the advent of a number of physicians and the credit would fall to the one who happened to be taking care of the child after the long period which is necessary to stabilize a digestive tract so profoundly upset as this one was.

The patient on admission was put on a fat-free diet with as little carbo-hydrate in it as consistent with maintaining anywhere near the adequate caloric value. During the first five weeks there was a loss in weight due partially to the inadequate diet, but gradually various articles were added all having the same tendency to be high in protein and low in fat and carbo-hydrates to overcome this caloric deficiency. Before admission the case had been from one doctor to another without showing any improvement and it was only because the parents had entirely despaired of the baby's life that they finally consented to placing her in a hospital. It was very largely because of this attitude on the part of the parents that we were able to keep the baby over a sufficiently long time to stabilize her digestion and gradually increase it to a sufficient level to secure a gain in weight.

In addition to the dietary consideration of this case certain diagnostic features were considered. The pigmentation on the backs of the hands quite sharply demarked at the wrists raised the question of pellagra. The history did not give any very satisfactory answer to this. The question of a ductless gland deficiency probably adrenal in origin also had to be considered. The way the pigmentation cleared up as soon as the dietary situation was straightened out, however, made us feel that the case was simply one of chronic intestinal indigestion.

CASE V. Mary F. Age 10 mos. Hosp. No. 4424.

Service of Dr. Robert B. Hunt.

Family History: The child is the youngest of five who are all living and well. The family is Scotch but this child was born in this country. There is no known history of tuberculosis.

Past History: Baby was full term and normally delivered. She was breast fed for three months and since then has been on a carefully

regulated formula made from Grade A milk with Dextri Maltose added.

Present Illness: About two months ago the mother noticed that the right thumb was swollen. Between two and three weeks later a similar swelling of the left thumb was noted. The family physician incised both lesions and obtained pus from them. Aside from the local condition her health has been satisfactory.

Physical Examination: The physical findings on admission are negative except for the local lesions. On the left hand the thenar eminence is very prominent due to a palpable enlargement of the first metacarpal bone. On the right hand the swelling is due to enlargement of the proximal phalanx. Around these areas the tissues appear indurated and reddened. There is a small discharging sinus lined with hyperplastic granulation tissue in the cleft between the thumb and index finger on each hand.

Laboratory Findings: Hemaglobin is 77% by Sahli. The red cells number 4,808,000 per cu. m.m. and the white cells 5,600 per cu. m.m. The differential count shows 33% polymorphonuclears, 53% lymphocytes and 14% large mononuclears. The Wassermann reaction is negative. The intradermal tuberculin reaction (1-1000) is strongly positive. Cultures from the lesions show only secondary infection by staphylococci.

X-Ray Examination: The right hand shows a punched out lesion of the proximal phalanx. This is accompanied by some periosteal thickening. On the left hand the first metacarpal presents a similar lesion but less sharply defined and containing several small sequestrae. Some of the other phalanges suggest beginning erosion. **Diagnosis:** Tuberculous Dactylitis.

Progress Notes: July 5, 1924: Following consultation with Dr. Granger and Dr. LoGrasso heliotherapy, supplemented by ultra violet therapy when the former was impossible, was started.

July 30, 1924. Gradual increasing doses of direct sunlight were given until a daily total of three hours was reached. The local lesions were covered during the first three weeks of the treatment. The fistulae have both stopped draining. General condition is much improved, with a gain in weight of 600 grams.

September 13, 1924. Very marked further improvement is noted in the general appearance. The skin is deeply pigmented and the muscle tone has improved. X-Ray examination at this time shows a definite calcification and periosteal thickening suggesting healing. She was discharged from the boat with the diagnosis of Bilateral Tuberculous Dactylitis and was referred to the "On Shore" Department for follow-up treatment by the ultra violet ray.

January 15, 1925. The general condition re-

mains very satisfactory. By X-Ray the bony lesions show almost complete filling of the punched out areas and definite periosteal thickening accompanied by a density of the shadow suggesting considerable calcium deposition.

Discussion: This case is interesting primarily as representing what the physiotherapeutic treatment of bone tuberculosis can do. The baby was one who had been seen several times at the "On Shore" clinic and developed a tuberculous dactylitis while under observation. No other lesions could be found and it could only be surmised that the source was from the food. The use of heliotherapy for these cases is the outcome of several communications with Dr. Horace LoGrasso of Perrysburg, New York, who assisted us by personally coming to Boston and supervising the installation of a suitable space upon the Hurricane Deck for the direct sunlight treatment of rickets and such other carefully selected cases as were presented. Acknowledgment of his courtesy further in permitting one of our nurses, Miss Catharine J. Wellington, to learn the exact technique of this form of treatment at the Perrysburg institution, is gratefully given at this time. The case responded very well to treatment and the accompanying X-Ray plates illustrate better than any description the unquestionable value of this form of treatment in the focal bone lesions of tuberculosis.

The only point of argument in this case was as to whether it could be considered definitely tuberculosis rather than some other form of chronic osteomyelitis. Several roentgenological consultants, however, agreed on the diagnosis from examination of the films and in view of the very strongly positive tuberculin reaction with no other etiological factor in the production of the lesions which developed over a period of weeks, very little opportunity for any other conclusion could be drawn. The results of the treatment obviously justified the claims of those more enthusiastic members of the profession who are using heliotherapy in the treatment of various forms of tuberculosis.

CASE VI. James Z. Age 3 months. Hosp. No. 4431.

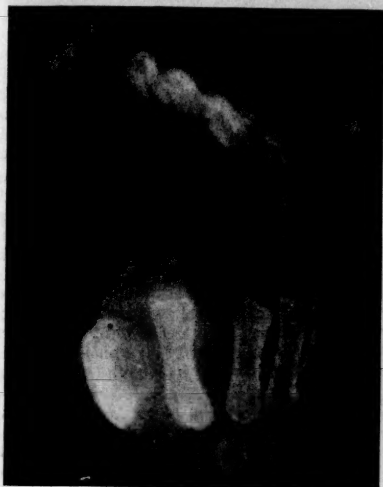
Service of Dr. Hyman Green.

Family History: The father and mother are both living. This is the first child. There have been no miscarriages and there is no known history of tuberculosis.

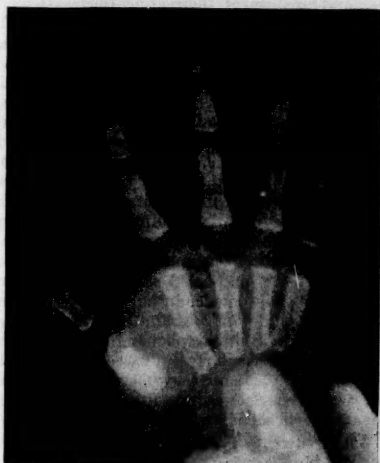
Past History: The baby was normally delivered at full term and weighed 7½ lbs. at birth. He was breast fed for only one week and then put on to a half and half milk and water formula with one teaspoonful of lactose to each feeding. Two weeks after birth the baby developed running eyes which discharged pus for about two weeks and then cleared up under local treatment.

Present Illness: The baby was taken sud-

denly ill 24 hours before admission. The onset was characterized by a convulsion in which the baby became rigid. This was followed by both clonic and tonic contractions of the muscles of coughing for 24 hours before the convulsion occurred and that its breathing had been noisy. There had been a discharge from the nose and marked cyanosis of the lips. He had refused



Taken July 2, 1924.



Six months later—January 1, 1925.

the extremities accompanied by rolling of the eyes and twitching of the eyelids and facial muscles. This lasted for about five minutes and then the baby fell asleep from exhaustion. The mother also stated that the baby had been food during the past 24 hours and had only slept intermittently. This first convulsion had been followed during the past 24 hours by 20 additional ones of the same general character, lasting from one to five minutes.

Physical Examination: The baby is fairly well developed and poorly nourished. He apparently has had very little care and looks extremely dirty. He presents an appearance of acute prostration and marked dehydration. The scalp is covered by thick cradle cap. His facies appear stupid. The anterior fontanel is very small but patent. The posterior fontanel is closed. There is a slight suggestion of a rosary but no enlargement of the epiphyses and no prominence of the frontal or parietal bosses. There is no demonstrable rigidity of the neck noted in spite of a very definite tendency of the child to hold itself in an opisthotonic position. **Head:** The pupils react to light sluggishly and there is some inequality in the reaction, the right being the more sluggish. There are no teeth present. There is a definite mucus discharge from the nose. The throat is moderately injected. On examination of the left ear the drum ruptured spontaneously with the discharge of a thin sero-sanguineous fluid. The right ear is negative. The lips are very dry and have definite sordes in the corners. **Thorax:** The heart is not enlarged but there is a slight systolic murmur heard best at the apex but not transmitted. The lungs contain many coarse rhonchi and there is an area of diminished breathing in the right upper lobe. No definite dullness, however, is made out. There is a suggestion of an expiratory grunt accompanied by dilatation of the external nares. **Abdomen:** There is a good deal of voluntary spasm of the abdomen but no definite areas of tenderness can be made out and no masses can be felt. The spleen is readily palpable two cm. below the costal margin. The liver just reaches the costal margin. **Neurological:** The kneejerks on admission are hyper active. There is a suggestive dorso-flexion of the right large toe, but the Babinski on the left is normal. There is no ankle clonus obtained. There is no demonstrable paralysis of the lower extremities. There is a moderate spasm of the legs which makes the presence of a positive Kernig sign uncertain. The cremasteric and abdominal reflexes are active. **Skin:** There is a rather generalized eruption of a dry scaly type, suggesting eczema in appearance. This is perhaps most marked over the face.

Progress Notes: The convulsions continued during the next twenty-four hours and were similar in character to those described as his having had at home. There were thirty of them in the first twenty-four hours varying in duration from one to ten minutes. No relief was obtained by the administration of luminal, triple bromides, or chloral-hydrate. Subcutaneous administrations of 10 grains of magnesium sulphate in 25% solution caused almost instantaneous cessation of the convulsions. He remained free from convulsions for the next twenty-four hours when they began again and

continued almost constantly. Lumbar puncture was performed but a slightly bloody fluid was obtained. The temperature on admission was 101.5 but fell to 99 degrees within 24 hours and ranged between 98.8 and 100.2 during his entire stay in the hospital.

The neurological picture changed almost hourly during the first few days but with a tendency for general spasticity predominating. The diagnosis obviously was related to the central nervous system and was not of toxic origin as was originally supposed in association with the otitis media and suspected bronchopneumonia.

Laboratory Findings: The white cell count showed 13,000 cells per cu. m.m. with 51% polymorphonuclear leucocytes and 37% lymphocytes, the remaining 12% being about equally divided between large mononuclears and eosinophiles. A second lumbar puncture gave a spinal fluid which was almost clear and under considerable pressure. Several examinations, including cistern puncture, gave a cell count ranging from 170 to 218 with over 90% lymphocytes. There was a definite increase in globulin and the fluid reduced Fehling's solution. No fibrin clot or pellicle formed. The blood Wassermann was negative.

A neurological consultation was held three days after admission with Dr. Bronson Crothers and a tentative differential diagnosis of some form of encephalitis or of an atypical meningitis was made. The skin lesions became more diffuse and because of their appearance attention was directed towards a specific etiology. The blood Wassermann was repeated and found negative. The mother stoutly denied any possibility of syphilitic infection. In spite of this, however, the Wassermann reaction was performed on the spinal fluid and found positive. Similarly the colloidal gold curve was found to be in the paretic zone. Consultation with Dr. Henry D. Lloyd of the Skin Department of the Massachusetts General Hospital confirmed the suspicion of syphilitic meningitis as the diagnosis and through his courtesy anti-luetic treatment was instituted by means of intraspinal injection of 5 c.c. of pooled salvarsanized serum. In addition gray powder in half grain doses and potassium iodide in 5 grain doses were given twice daily. Sulpharsphenamine was administered intramuscularly at weekly intervals. This was supplemented by mercury inunctions and two weeks later an additional 5 c.c. of the salvarsanized serum was given intraspinally.

Within twenty-four hours after the intraspinal administration of the serum the convulsions stopped and did not recur. During the course of a month the baby's general condition improved, the skin lesions cleared up, the nasal and aural discharge stopped and the reflexes became normal. The weight remained stationary during this period. A blood Wassermann taken at this time gave a positive reaction.

With this conclusive evidence the mother admitted her infection, her Wassermann was taken and found positive and she was referred to a venereal clinic for treatment. By the time of discharge, seven weeks after admission, the baby had gained over a pound in weight and seemed well on the road to recovery. He was referred to a venereal clinic to continue his course of antilutetic treatment. Six months later, when seen in the Health Clinic at the On Shore Department, he showed no evidence of his admission condition and was found to have gained normally in weight.

Discussion: This case offers many points of interest. In the first place it is the youngest case of syphilitic meningitis which we have been able to find in a casual search of the literature. It brings out the extreme difficulty of diagnosis: it illustrates the importance of a reliable history, and emphasizes how little attention can be given to the unsupported statements of the parent.

The onset in this case was unusual and atypical. The association of what apparently was a simple upper respiratory infection while ultimately of value in confirming the diagnosis, was at the outset very confusing. The convulsions seemed to be readily enough explained on the basis of toxemia. The low temperature and the relatively low white count were difficult to explain in association with an upper respiratory infection and called attention to the probable central nervous origin of the disease. The spinal fluid was the most useful bit of evidence obtained in arriving at the final diagnosis, as the low cell count with a high lymphocytic percentage was very suggestive of either an encephalitis or a meningitis either tubercular or syphilitic in origin. The comparatively normal reduction of Fehling's solution made meningitis the more probable. The absence of the pellicle and fibrin clot were point against a tuberculous etiology, and finally, the Wassermann reaction positive in the spinal fluid while still negative in the blood stream was very valuable evidence. Furthermore, the course of the disease and the history of the onset was strongly against tuberculous meningitis.

From the differential point of view a number of other conditions were considered and gradually ruled out. Anterior poliomyelitis was one of the most likely diagnoses. No paralyzes, however, were present although at one time a suspicion of an internal strabismus was noted. The rather stupid facies, the thickened skull with an almost closed anterior fontanel, the dry, scaly skin on admission, and a somewhat thickened tongue led to the suggestion of hypothyroidism, and the therapeutic effect of small doses of dissicated thyroid glands was advocated as a therapeutic test for diagnosis.

The questionable strabismus, the general spasticity associated with marked variation in the neurological findings, the persistently low

temperature, and the low white count, as well as the low cell count of the spinal fluid and the negative blood Wassermann, were all very much in favor of a myoclonic type of encephalitis. The final clinical diagnosis was based chiefly on the appearance of the skin lesions which were quite typical as they developed during the course of the first few days.

The apparently hopeless condition of the baby made any form of treatment justifiable, so that specific treatment with mercury, arsenic, iodides, and salvarsanized serum was pushed to what was felt the limit of intensive therapy. The results justified the decision which was made with considerable temerity. It is felt that this case is one of the most instructive which was admitted during the season and for that reason is included in this series of case reports.

CASE VII. Periklo T. Age 6 months. Hosp. No. 4444.

Service of Dr. Hyman Green.

Family History: The father and mother and three other children are living and well. One child died at two and a half years of unknown cause.

Past History: The baby was full term, and normally delivered. He has been breast fed since birth but for the past month has been receiving whole milk in addition as a supplementary feeding.

Present Illness: The baby was taken sick rather suddenly in the evening four days before admission with pain, restlessness and insomnia. He passed several stools containing mucous and dark blood. The next day he seemed better and had three stools which were dark in color and contained some mucous. He vomited occasionally from the time of onset. Twenty-four hours before admission he became much sicker, his abdomen was distended and he passed several small stools. He was referred to the hospital with a diagnosis of infectious diarrhea and was admitted just before the boat sailed.

Physical Examination: On admission, he presented a picture of moderate prostration. The tongue was badly coated and there was a little bile stained mucous adherent to the posterior pharyngeal wall. There was no cervical adenopathy. The chest was entirely negative. There was very little evidence of dehydration. The abdomen was tensely distended making examination unsatisfactory. There was no localized rigidity and no definite areas of tenderness. The baby was irritable during the examination and apparently was generally uncomfortable on being handled. There was no visible peristalsis and no masses were felt. Rectal examination was negative except that a little bright blood was noted on the glove. Fecal material was definitely present. The temperature on admission was 103.5.

Progress Notes: An enema was given shortly after admission and fecal material obtained

in small amounts with considerable mucous and occult blood. The temperature fell to 100.8 during the next four hours and the general condition of the baby seemed improved. It was felt advisable to wait until morning before taking any surgical step although the possibility of intussusception or appendicitis were considered. In the morning the child seemed better and passed two small stools consisting chiefly of bile stained mucous. A surgical consultation was asked for that afternoon. During the morning the baby vomited for the first time following admission. About two o'clock in the afternoon there was a sudden change in its condition, with marked prostration, the temperature rose abruptly to 105, vomiting became almost continuous. Gastric lavage was followed by temporary relief and diminution of the abdominal distention. Emergency surgical intervention was deemed advisable as the only possible means of saving the baby's life. The prognosis seemed absolutely bad.

Laparotomy was performed by Dr. James S. Stone, the Surgical Consultant of the Hospital, and an extensive intussusception extending from the ileo-cecal valve to the splenic flexure of the colon was found. Gangrene was present throughout the entire length. Reduction of the intussusception was impossible and resection of the involved area was performed. Drainage tubes were inserted into both the sigmoid and the ilium. The baby died on the table just as the last skin suture was being tied.

Discussion: This case again illustrates the difficulty of diagnosis. It is representative of several cases which were referred to the Hospital during the summer as infectious diarrhea or dysentery because of the presence of blood in the stools. In this particular case the diagnosis rested between infectious diarrhea or an acute surgical condition, either intussusception or appendicitis. The acute onset was suggestive but with the history of four days duration before admission, with the passage of stools during that interval, it was felt advisable to hold off surgically until a definite diagnosis was reached. Apparently the obstruction was incomplete during the four days, which thus accounted for the unusual duration of symptoms with the comparatively good appearance of the patient on admission. Even after admission to the hospital uncertainty as to the presence of obstruction was felt, particularly as the temperature dropped and no mass was palpable either externally or by rectal examination. The reduction of the distention by enemata and gastric lavage rather suggested an infectious condition and it was not until the characteristic vomiting began with the acute onset of severe toxemia apparently as the result of absorption from the gangrenous mucosa that any degree of certainty as to the diagnosis was felt. The question as to whether operative procedure twelve hours earlier would have made any dif-

ference in the outcome is one of course which can never be definitely answered but it has been the general experience of surgeons familiar with this type of case that unless surgical intervention is taken within the first forty-eight hours at the very outside, the mortality is practically 100%.

CASE VIII. Henry C. Age 12 months.
Hosp. No. 4457.

Service of Dr. Robert D. Hunt.

Family History: The father and mother and one brother are living and well.

Past History: The baby was full term and normally delivered, weighing 6-10/16 lbs. He has been breast fed up to the present time.

Present Illness: The onset of the present condition started about three months after birth, at which time a skin eruption developed about the inguinal region. There has not been a satisfactory physical development during this interval. About three months ago the child developed a stomatitis which was diagnosed as thrush and which has been persistent since its onset. This extended to the lips and apparently was so painful as to cause the child to refuse to take food. He was seen at another hospital shortly after the onset of this condition and was given gavage feedings of milk drawn from the mother. On admission to this hospital it was found that he was not getting enough food from the mother and for this reason he was put on a simple formula of lactic acid milk with Karo corn syrup. There was no history of vomiting except occasionally immediately after feeding. The bowel motions are formed, foul smelling and number two to three a day.

Physical Examination: The child is poorly nourished and poorly developed, weighing only 4890 grams. He is rather apathetic in appearance. **Head:** Scattered over the scalp are numerous coalescent areas suggesting very pronounced seborrhea. The hair is very scanty and rather coarse. Over each temporal area there is an especially pronounced patch of hard, brownish, crusted papules. The anterior fontanel measures $1\frac{1}{2}$ c.m. There is no evidence of rickets in the skull. About the orifice of the mouth, the skin and mucus membrane are covered with an impetiginous appearing eruption. The mucosa lining the buccal cavity, including the lips, hard and soft palates, cheeks, and tongue are covered with a whitish exudate occurring in milium size coalescent areas. The epithelium of the lips is badly fissured. There are six teeth present about the roots of which there is a very acute gingivitis. The skin lesions extend down the neck with a few scattered similar appearing crusted papules. **Thorax:** The chest is essentially negative. **Abdomen:** There is moderate distention with definite enlargement of both liver and spleen. The edge of the spleen is felt four c.m. below

the costal margin in the mid axillary line. The liver is palpated three c.m. below the costal margin in the mid-clavicular line. There is no apparent tenderness. *Skin:* The lesions of the skin, other than those of the scalp, are chiefly confined to the genital region, although a few solitary papular areas of eruption are noted over the abdomen. There is an extensive crusted almost solidly coalescent eruption involving the scrotum and the perineum extending down the inner aspects of both thighs. The lesions are somewhat scaly and dry, covered by a thick brownish crust. There is marked edema of the scrotum and prepuce. In addition there is a definite ischio-rectal abscess which on incision yields about a teaspoonful of foul smelling yellowish pus. Interestingly enough the area adjacent to the anus is apparently free from the inflammatory process.

Progress Notes: 7-26-24. During the first two weeks in the hospital the general condition of the child seemed to improve with a gain in weight of nearly 400 grams. Local treatment of the mouth by means of a saturated potassium chlorate has been partially successful in clearing up the lesions. Externally an ointment consisting essentially of bismuth subnitrate has yielded fairly satisfactory results. In addition, ammoniated mercury was applied to the scalp lesions. During this interval a typical mercurial discoloration of the finger nails became apparent and the ammoniated mercury applications were stopped on this account. The feeding history has been one of lactic acid milk and Imperial Granum made thick enough to prevent regurgitation. At first this had to be given by gavage but lately he has improved sufficiently to take it voluntarily. 8-6-24. During the past ten days the child's condition has not been as satisfactory. There was a definite loss in weight of nearly 300 grams. During the past week the baby has vomited two or three times a day. A consultation with Dr. E. Lawrence Oliver, the Staff Dermatologist, led to the conclusion that the entire process was due to a fungus growth of some sort. Heliotherapy has been utilized during the past two weeks as a supplementary method of treatment and the local lesions seem to have benefited to some extent.

8-31-24. Since the last note there has been an almost steady loss in weight. The formula has been changed slightly but without any notable improvement in the child's condition. Forty-eight hours ago there was a very marked change in the patient's condition with a rise in temperature to 102. The stools increased to five in number and they were of a definite fermentive character, in spite of being on a formula of Eiwelss Milk. Subpectoral administration of 900 c.c. of saline was resorted to without marked change. Because of continued vomiting nasal feeding of a thick cereal formula was started. In spite of everything that could

be done the general condition steadily became worse and the child finally died.

Laboratory Findings: The examination of the blood on several occasions showed essentially a normal picture. The red cells numbered 5,200,000. The Hemoglobin was approximately 60%. The differential count showed between 55 and 64% polymorphonuclear leucocytes, 28 to 35% lymphocytes, 8% large mononuclears, and 3% eosinophiles on several occasions. The stools varied slightly with the formula, tending to have a rather cheesy or fecal odor and to be alkaline in reaction. There was usually an increase in the normal amount of fat. The urine was negative consistently. The Wassermann and intradermal tuberculin reaction were negative. Cultures from the skin and mouth lesions and from the stools all yielded a *Monilia*. The superficially resembled the usual *Monilia albicans* usually associated with thrush. A more careful study of this organism is being made and will be reported subsequently. Preliminary observations seemed to suggest that it falls into a position between the *Monilia albicans* of thrush and the *Monilia psilosis* of sprue.

Autopsy Findings: The body is that of an emaciated male infant showing a diffuse chronic granulomatous infection of the scalp, mouth, scrotum and thighs. There is marked pigmentation of the skin due to heliotherapy. The peritoneal cavity is negative. The right pleural cavity presents a marked hydrothorax with complete atelectasis of the lungs. There is a compensatory emphysema of the left lung. On section the lung shows numerous small grayish white miliary sized nodules almost suggesting tubercles. The liver shows a similar diffuse infiltration with grayish caseous areas having the appearance of conglomerate tubercles. There is marked chronic perisplenitis with healed organized scars. The kidneys are enlarged, their capsules strip readily; there is profuse fatty degeneration and numerous foci suggesting similar chronic granulomatous lesions to those found in the liver and lungs are noted. The most striking lesions are found throughout the entire gastro-intestinal tract where follicular ulcers of the mucosa, particularly in the oesophagus and ileum are encountered. This is accompanied by a diffuse chronic inflammatory thickening of the sub-mucosa. The ulcers characteristically have a periphery of hyperplastic granular tissue with a central shaggy area presenting hemorrhage and an adherent fibrinous exudate.

Discussion: This case is one which emphasizes the importance of that group of organisms of which so little is known—the *Monilia*. The relationship between thrush and sprue is one which offers a great deal of speculative possibility. Whether the organism may not be the same simply as modified by environment has been suggested. From previous study of

a number of strains of *Monilia* it seems as if there were at least two groups of organisms: one ordinarily saprophytic in nature, the other definitely pathogenic. As has been intimated this particular organism apparently occupies a position midway as measured by cultural and serological reactions. The presence of a definite mycotic septecemia with the formation of multiple abscesses in the viscera is a very unusual reaction for any of the *Monilia* which ordinarily are pretty regularly restricted to the gastro-intestinal tract. For this reason alone this case is of sufficient interest to warrant its being reported. The postmortem findings yielded important information in understanding the failure of the local therapy to ameliorate the child's condition and only emphasizes how resistant to such an infection the body can become. It is interesting in connection with this case to note that the blood remained practically unaltered throughout the nine months' duration of the disease. In this respect it is very unlike sprue in which the blood is comparatively early affected with a resultant anemia often of a degree approaching that seen in pernicious anemia.

CASE IX. Josephine C. Age 19 months.
Hosp. No. 4390.

Service of Dr. Hyman Green.

Family History: The father (age 44) and mother (age 36) and five other children are living and well. There has been no known exposure to tuberculosis.

Past History: The baby was born at full term and normally delivered, weighing $8\frac{1}{2}$ lbs. at birth. She was breast fed for three months and then put on the bottle. No details of the feeding history could be obtained, but since about ten months of age she has practically been on a table diet. She is said to have had chicken pox at the age of five months. She was on the Day Deck of the Floating Hospital during the summer of 1923 at which time she presented a fairly typical picture of malnutrition with a moderate secondary anemia.

Present Illness: The parents brought the baby to the hospital because of the severe anemia, failure to gain and marked weakness. The present condition seems to have been a progressive development from the malnutrition of a year ago. She has been to several out-patient clinics during the winter and has had several examinations of her blood. Transfusion has been recommended but to the present time refused. Last year's record states that the liver was palpable one centimeter below the costal margin and that the spleen could be felt two centimeters below the costal margin. On admission she is unable to stand alone and is extremely pale with an almost icteric tinge to the skin.

Physical Examination: The baby is fairly well developed and nourished but very sallow and rather apathetic. There is slight promi-

nence of the parietal and frontal bosses but no evidence of craniotabes. The anterior fontanel is still palpable; there is a faint suggestion of a rosary but no enlargement of the epiphyses. There is slight photophobia and the sclerae appear almost blue due to the ab-



PLATE III. Note enlargement of spleen—outlined in black.

nence of visible capillaries. There are fourteen teeth which are poorly kept but show no actual caries. The throat is negative. There is moderate enlargement of the cervical, the inguinal, and the right axillary lymphnodes. *Thorax:* The heart is negative except for the presence of a diffuse systolic bruit which is best heard at the apex. The lungs are negative. *Abdomen:* The abdomen is prominent due chiefly to the presence of an enormously enlarged spleen which reaches the symphysis pubes. There is a definite notch felt at the level of the umbilicus four c.m. to the left of the mid line. The spleen is very firm and has

rounded edges. The liver reaches five and a half centimeters below the costal margin in the anterior axillary line. The reflexes are normal. There is slight dilatation of the superficial veins over the chest and abdomen.

Laboratory Notes: The only findings of interest are those concerned with the blood except that the urine and stool usually showed a rather characteristic increase of bilirubin or its derivatives—amorphous urates and urobilin. The Wassermann reaction and the skin test for tuberculosis were both negative. **Blood:** On admission the red cells numbered 1,952,000 and the white cells 23,000. The hemoglobin was approximately 30% by both Tallquist and Sahli. The platelet count was approximately 300,000. The differential showed the following percentages:

Polymorphonuclears	39.6%
Small Lymphocytes	12%
Large Lymphocytes	30.4%
Large Mononuclears	17.4
Eosinophiles	.6

The blood smear presented evidence of a very marked secondary anemia with extreme poikilocytosis, anisocytosis, punctate basophilia, achromia, and polychromatophilia. There were many cells showing Cabot's ring bodies and Howell-Jolly bodies, in addition to a number of megaloblasts and normoblasts. The reticulated red cell count was 5% and the color index was 1.2. The fragility test showed beginning hemolysis at .56% complete at .42.

Progress Notes: 7-7-24. The child had a temperature of 102° on admission which remained elevated. The red count dropped slightly and it was decided to attempt transfusion to try to improve the condition of the child sufficiently to warrant splenectomy. On the 3d she was given 90 c.c. of blood, which was followed by increase in the red cell count to 2.5 millions.

7-24-24. During the week following transfusion the red cells continued to increase to 3 millions. On the 12th another transfusion of 200 c.c. was given following which the red count rose to over 4 million and the hemoglobin to 63%. Accompanying this, there has been a definite reduction in the size of the spleen and marked improvement in the general condition of the child. The red count and hemoglobin percentage subsequently gradually fell, now being 3,840,000 per cu. m.m. in number and 54%.

8-11-24. An additional transfusion was given on the 26th, the father acting as donor; 215 c.c. of citrated blood being successfully given. There was a marked reaction, temperature rising to 106 but falling to normal within 24 hours. The red cells reached a level of 4,800,000 and the hemoglobin 65%. Gradually during the past two weeks the hemoglobin has dropped to about 50%, although the red cells have remained at about the same level

though tending to diminish somewhat but at a slower rate than the hemoglobin did.

8-28-24. During the past three weeks the red count has slowly fallen until at the present time it is just slightly over 3,000,000, with the hemoglobin persisting at about 50%. The white cells number from 10,000 to 15,000. For an interval it seemed as if transfusion alone might be sufficient to improve the condition of the patient but after four transfusions it is quite obvious that the blood destruction is going on at a much more rapid rate than the blood formation and the only apparent means at hand to prevent this is by splenectomy.

9-15-24. Splenectomy was performed on the sixth of September by Dr. James S. Stone. The spleen weighed 192 grams. There was an uneventful recovery accompanied by very marked changes in the blood picture. The red cell count showed a progressive increase in the number of red cells up to slightly over 3.5 millions. The white cells correspondingly increased to approximately 30,000. One of the most striking changes was in the fragility, which was reduced very markedly, beginning at .36 and being complete at .18.

10-15-24. There has been marked clinical improvement in the baby with a tendency for the red cells to increase to around 4 millions. The white count has been very high ranging around 60,000. The smear shows very active hematopoiesis with as many as 20,000 nucleated red cells per cubic m.m.

11-15-24. She was discharged home during the past month and developed an acute upper respiratory infection, for which she was readmitted. There was a sharp reduction in the red count to approximately 2,000,000, with a corresponding reduction in the hemoglobin to less than 50%. Also of interest was the sharp decrease in the number of nucleated red cells to only a few hundred per cubic m.m. Following admission intensive diathermic treatment for the upper respiratory tract infection caused it to subside and a suggestion of improvement in the blood picture was noted.

12-15-24. During the past month there was a steady increase in the number of red cells and white cells, particularly of the former, which reached a figure of over 100,000. It was felt that time might be saved by giving a transfusion and on the 26th of November 240 c.c. of blood was given. Following this the red count rose to over 3,000,000 and the general condition of the baby was much better. There has been a steady increase in the number of white blood cells which reached a maximum of 165,000 on the 12th. At the same time there was an increase in the nucleated red cells to over 1,000,000 per cubic m.m. This is the most extraordinary degree of blood regeneration which it has been our experience to see.

2-15-25. During the past two months there has been a steady clinical improvement in the

baby. The blood picture has become more stabilized with the development of the typical post-splenectomy anemia. The red cells have become reduced to between three and 3.5 million, with the hemoglobin around 50%. The white count has increased again following a temporary reduction and now ranges around 150,000, with the differential count showing 75% lymphocytes and 25% polymorphonuclears. The fragility remains low, beginning at .34 and being complete at .10. She is being kept under observation because of extremely poor home condition and aside from general nutritional care, is being given ultra-violet therapy. Clinically she has improved to an unbelievable extent, but she still maintains a

examined histologically, would not fall under Banti's description. In this case the histological examination of the spleen, removed operatively, dispelled any question of Banti's disease, as it represented one of the most active cellular organs imaginable with no evidence of the characteristic "fibro-adenie" of Banti.

Similarly Von Jacksch's anemia is usually seen in younger children and runs a much more rapid course and the blood picture which this case presented, while not inconsistent with this type of anemia, still presented a number of features which did not correspond with the classical description. Particularly in the case of the nucleated red cells and in the leucocytes was this true, as in neither instance was the

Summary of Blood Findings in Case II

Date	White cells per cu. m.m.	Red cells per cu. m.m.	% Hgb. (Sahl)	Differential Count				Nucleated Reds per 100 w.b.c.	Fragility		Remarks
				Polymorpho- nuclears	Lympho- cytes	L.M.F.	Eosino- phils		Begin	Complete	
6-29-24	23,000	1,952,000	30	39.6	42.4	17.3	0.7	Occasional	.56	.42	
7-10-24	23,000	4,696,000	61	51.0	35.0	13.0	1.0	Occasional			Following transfusion 240 c.c. bl.
7-24-24	15,400	3,532,000	54	38.4	47.6	13.0	1.0	Occasional	.52	.40	
7-29-24	17,000	4,040,000	65	56.0	36.0	8.0	0.0	rare			Following transfusion 215 c.c. bl.
8-11-24	11,800	3,376,000	52	36.2	56.8	4.0	3.0	Numerous	.52	.40	
9-3-24	15,200	2,760,000	45	32.0	59.0	6.0	3.0	Numerous	.54	.40	
9-7-24	28,000	2,880,000	65	46.0	41.0	11.0	2.0	Very Numerous	.40	.20	Splenectomy & transfusion 9-6-24
9-30-24	68,000	3,936,000	65	70.0	30.0			Very Numerous			
10-30-24	154,000	2,668,000	37.0	63.0				Very Numerous			
11-26-24	84,000	3,060,000	45	60.0	35.0	5.0		Very Numerous			
12-27-24	114,800	3,640,000	47	30.0	62.0	8.0		375,198	.32	.18	
1-23-25	130,000	3,160,000	47	26.0	64.0	7.0	3.0	441,900			

very abnormal blood picture and has a persistent anemia which is probably due in part at least to the removal of the spleen. It is hoped to follow this case over a longer period of time to observe the duration of the operative effect.

Discussion: A discussion of this case involves a consideration of the various types of anemia with which we are wont to deal in infancy. The differential diagnosis in this case rested between Von Jacksch's anemia, congenital hemolytic anemia (Chauffard-Minkowski type), splenic anemia (Banti's Disease) or some hitherto unrecognized form of severe secondary anemia associated with splenomegaly. The question of Banti's Disease can be perhaps most readily disposed of. The case was a slowly progressive one with a history of recognized splenic enlargement for over a year and apparently originally associated with rickets. The reduction in size of the spleen following several transfusions argues strongly against the Banti's type of Splenomegaly. Furthermore Banti's Disease is not strictly a disease of infancy and many of the so-called cases, if

count sufficiently high on admission to direct suspicion toward this condition. The decreased fragility of the red cells were also very strong evidence against its being Von Jacksch's.

From the point of view of congenital hemolytic anemia we have the most evidence. The sallowness of the skin without real jaundice is very typical of the Chauffard-Minkowski type of hemolytic jaundice. The increased fragility is extremely characteristic of the disease. The excessive enlargement of the spleen, accompanied by considerable enlargement of the liver, also lends support to this diagnosis. In the congenital type of this disease a definite family history is not necessary and while it would have been of material aid in establishing our diagnosis it does not seem to be essential. The weight of the evidence, therefore, seems to classify this particular case in the general group of hemolytic anemias. As it is obviously unlike pernicious anemia or aplastic anemia it leaves us very little choice. At this age and without a wider family history it is not likely to be the acquired or Hayem-Widal type and ac-

cordingly, finally, from the point of classification must be considered as a case of congenital hemolytic anemia.

The other points of interest which this case brings up are the effects of splenectomy upon such a young child. There are practically no reports in the literature to effect a comparison. The work of Pearce on Splenectomy in animals, and the various reports by Krumbahr and the Mayos upon the effect of splenectomy in adults are the chief sources of information as to what we might expect. Bartlett, however, has emphasized the value of splenectomy in infants and children in an admirable report in the *American Journal of Diseases of Children* for April, 1922. This particular case, following splenectomy, showed very interesting changes in the blood picture. It developed, as animal experimentation would lead us to expect, a marked increased resistance of the red cells to hemolytic agents. Whether this is accomplished by removing the catanonic effect of the spleen or whether it is simply the result of the actual diminution in the blood destruction of the spleen, it is hard to say. In the second place after an interval of six months there has apparently developed the rather characteristic post-splenectomy anemia, which in this case has established its level at about 3,000,000 red cells per cubic m.m. with a hemoglobin of approximately 50%.

Unlike the usual reports, the effect on the white cells has been remarkable. Ordinarily an initial increase in the number of white cells to perhaps thirty or forty thousand per cubic m.m. would not have been surprising. In view of the fact that the patient was a baby possibly even double this number might not have aroused a great deal of comment because of the well recognized instability of the infant's hematopoietic system. The fact that in this particular case the white count has risen to as high as 160,000 per cu. m.m. might give rise to the suspicion that we were dealing not with a simple post-splenectomy leucocytosis but with a leukemia. With the differential counts on these high figures, however, the lymphocytes remained consistently around 60%, which is too low for the possibility of a lymphatic leukemia to be very definitely considered, particularly as the polymorphonuclears consistently remained around 30% and appeared essentially normal. Furthermore, chronic lymphatic leukemia in infancy is, as far as we are aware, non-existent, and the acute leukemia of infancy, while it might represent a mixed type, would run a very rapid course and from experience in similar cases in adults, no benefit should have been found following splenectomy. For these reasons, therefore, the final diagnosis of congenital hemolytic anemia seems warranted in our opinion, and the case is being reported because of the value to be derived from the careful stud-

ies of the blood following splenectomy in infancy.

CASE X. Daniel H. Age 3½ mos. Hosp. No. 4452.

Service of Dr. Paul W. Emerson.

Family History: Father and mother are living and well. This is a first child.

Past History: The baby was born at term by version and extraction. The birth weight was nine pounds. He was breast fed for three weeks and then put onto a formula of top cream 7 ounces, water 12 ounces, milk sugar 2 tablespoonfuls, lime water one ounce, and fed 3 ounces every three hours.

Present Illness: The patient is admitted with a history of persistent vomiting since birth but more marked since being on a formula. He vomits after every feeding and usually about half of the amount. The vomitus is curdled and sour smelling. The stools are normal or slightly constipated.

Physical Examination: The baby is fairly well developed but poorly nourished. There are no positive findings except slight squareness of the head, prominent parietal bosses, a widely patent anterior fontanel, and a slight enlargement of the costo-chondral junctions.

Progress Notes: On the basis of the history the child was put onto Eiwiss Milk to which Imperial Granum was added in sufficient amounts to make the feeding so thick that it had to be given by a spoon or through a Hygiea nipple with the end cut off. This gave a caloric value of nearly 200 per kilo. The vomiting was diminished within 48 hours and only regurgitation of a few c.c. of the formula occurred although on the first few days with a simple formula he vomited persistently. The strength of the formula was gradually increased by the addition of more Imperial Granum and the baby continued to improve. The vomiting decreased in amount and in frequency and on discharge after three weeks in the hospital there was a gain in weight of nearly one kilo.

Discussion: This case was admitted as one of pylorospasm with a question of a congenital incomplete stenosis. It is presented chiefly to illustrate the value of thick cereal feeding in this type of case. If this method of feeding is employed over a long enough period of time gradually the spasm is overcome and the formula can be adjusted to a more rational one. This case has been followed over a period of eight months now and constant improvement has been noted, so that now he is apparently a perfectly normal infant for his age and the irritable pylorus has completely subsided.

THE ETIOLOGY OF ABORTION*

BY DONALD MACOMBER, M. D.

To most of us as obstetricians or gynecologists the frequent occurrence of abortions has become such a commonplace that it has largely been accepted as an established fact of nature about which little constructive could be done in the way of prevention. We have largely failed to appreciate the economic seriousness of the problem, or even that there was a problem at all. It is a strange commentary on human nature that man becomes aroused to conditions of this kind often only when his pocket book is involved. One has only to compare the recent voluminous literature on the contagious abortion¹ of cattle with the paucity of that on human abortion to appreciate the justice of this observation; yet it goes without saying that the loss of a potential human life when added to the danger and loss of time for the mother, though impossible of estimation in dollars and cents, far outweighs any corresponding loss to the animal industry.

Before proceeding further in this discussion it becomes important to define our subject carefully so that there may be no misunderstanding as to just what is meant by the term abortion. Because of the common use of this word to describe the termination of a pregnancy by artificial means, it is open to misinterpretation. It is, however, the proper scientific term for the interruption of any pregnancy before the twenty-eighth week when the child is supposed to be viable, and will be used in that sense throughout this paper. Defined in this way "abortion" includes "blighted ovum," abortion as commonly used and miscarriage.

Abortion is of very frequent occurrence. Some authorities² make its frequency as great as one out of four or five pregnancies. In Williams textbook the figures as quoted from several authorities are given as one out of five or six. In order to get another check the records of 250 married women who had borne children were examined. There were recorded 568 pregnancies, but of these only 440 lasted beyond 28 weeks; the other 128 ended in abortion—a percentage of slightly more than 24. In other words, nearly one out of every four pregnancies terminated prematurely. I have no doubt that some of these abortions were brought on by artificial means—there being no way of checking the statements made by these patients—but even so, after making every allowance for such occurrences, the incidence of abortion to the production of viable offspring remains surprisingly large.

It is an interesting fact, and one which will later be commented on at greater length, that

the proportion of abortion to normal pregnancies is even greater among sterility patients than in the general run of pregnant women. It may seem somewhat paradoxical to speak of normal pregnancies occurring among sterility statistics, but this is explained by the large group of so-called "one child" sterilities—where after one or more normal pregnancies a state of sterility has supervened. In an analysis of 250 sterility records there was a total of 183 pregnancies of which 85 ended in abortion—a percentage of 46—practically double that among women in general. It will be seen that the problem of abortion thus forms a not unimportant part of the general problem of sterility, or, as we prefer to call it, that of low fertility. We prefer this term because the very occurrence of a pregnancy, even if it ends prematurely, is in itself proof of the existence of some degree of fertility, and because we find that as a patient improves under treatment often the first sign of an increase in fertility is the occurrence of an abortion, to be followed later, when the fertility is still higher, by the birth of a normal full term child. In fact, as will appear more fully in what follows, it does not seem at all unlikely that a large proportion of all abortions is caused by some reduction in fertility.

We are accustomed to recognize that abortions vary in their clinical course and requirements for treatment according to the period of pregnancy at which they occur. The distribution statistics which I shall quote are derived from the study of the 250 "normal" cases previously mentioned, combined with the abortions which occurred among the 250 "sterility" records. There is one source of error which must be reckoned with always in any such inquiry, and that is the undoubted frequency of very early abortions where the patient has only gone over the time for her period two or three weeks more or less. In these cases the previous existence of a pregnancy must usually remain a matter of conjecture. From this study we find that though an abortion may occur at any time there are two periods when it is much more common. These are around 6-8 weeks, and 12-14 weeks. In the histories of 133 occurring before the 28th week, 43, or practically one-third, came in the first 6-8 week period, and 50, or somewhat more than another third, in the second or 12-14 week period. The remainder were scattering.

We come now to the main subject of this paper—the question as to what causes abortion. This question is a most complex one as indicated by what has already been said, and cannot receive a simple answer. Our ideas as to causation have been much altered as the result of recent animal experimentation and embryologic

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study. These studies are so important to an understanding of the problem that I shall present some of them in brief form for your consideration.

With mammals it is difficult without special procedures to follow the development of the fertilized egg through to birth, but with birds³ this is quite easy. When this development is studied it is found that in a certain number it ceases before the full cycle is complete. The percentage of cases in which this occurs, other things being equal, varies with the condition of the parent birds—particularly as regards their age, vigor, etc. It also varies in the same individuals with the season. In the spring there is normally a much higher percentage of eggs which hatch than in the fall. It is possible that there may be genetic factors as well so that races might be selected for high hatchability. The point I wish to make is that this percentage of complete development of the embryo may be taken as a gauge of the fertility of the parents.

With mammals the problem is somewhat more difficult to study because of the different physiologic processes involved; but in the case of certain animals it has been possible to demonstrate that a similar prenatal mortality occurs. The species of animals where this has been shown are rats and mice (McDowell⁴, Evans⁵, and others), ferrets (Robinson⁶) and swine (Corner⁷). As will be seen from what follows the method necessitates working with animals which customarily bear large litters; but in addition Robinson⁶ has collected evidence from the breeding records of horses and cattle which tends to corroborate this even among uniparous animals. In the case of the pluriparous animals quoted above the method has been to compare the number of eggs produced at a given time, as shown by a count of the corpora lutea of pregnancy with the number and size of developing fetuses in utero at some later stage in the pregnancy, and again by comparing both of these with the size of the litter actually produced. It is found that more eggs are produced than can be found as developing embryos later, and that the number in the litter is smaller than the number of embryos observed before birth. Furthermore when these animals are examined during pregnancy embryos in various stages of resorption can be demonstrated. Corner's⁷ figures for the pig show that under normal conditions, and with no evidence of disease, only 70% of the eggs produced undergo full intra-uterine development. Here again, as in poultry, we have an indication of fertility; the smaller the proportion of failures of complete development, the higher the fertility.

In addition to these experiments there are certain others which show how fertility may be reduced. Working with rats, and later with mice, McDowell⁴ has shown that there is a definite reduction in litter size when the animals are

regularly exposed to the fumes of ethyl alcohol. He has recently found that this reduction in the size of the litters is not due to a failure of ovulation, but to the resorption of developing embryos.

So far the lowering of fertility in these cases has apparently been largely due to factors affecting the egg cell. There is other evidence, however, tending to prove that there may be factors affecting the male cells. For instance, it has long been known that removing the seminal vesicles from rats⁸ greatly reduces their fertility so that only occasionally does one of these animals impregnate a female, and then the litter size is small. The explanation has been that the vesicles supplied a mechanical factor through the clotting of their secretion necessary to prevent the escape of the semen from the female. We⁹ have recently repeated these experiments and have found that when impregnation does occur a practically normal number of embryos may begin development, but that perhaps only one of four or five of these will come to maturity. In other words, full vitality of the spermatozoon is certainly one factor necessary for full development of the embryo. This is strongly suggestive that low fertility of the male—as well as low fertility of the female—may be a cause of the premature termination of a pregnancy.

There has been a great deal of work showing the increased percentage of abortion or the production of dead and macerated fetuses from the exposure of the mothers during pregnancy to deficient diets. Hart, Steenbock and Humphrey¹⁰ have shown this for cattle and swine, and McCollum¹¹, Evans⁵ and Reynolds and Macomber¹² for rats, and there is an increasing literature showing the relation of diet to fertility in general among the lower animals.

Summarized this experimental evidence comes down to this;—first, that the percentage of living young to the number of eggs produced is a good index of fertility;—second, that there are probably factors which may influence the vitality of eggs or sperm in such a way as to decrease this percentage or lower the fertility;—third, that when animals are poisoned or are subjected to deficient diets this same evidence of lowered fertility is produced, but whether this is due to the effect upon the nutrition of the growing fetus, or to a lowering vitality of the egg or sperm cell, we have not as yet sufficient evidence to state.

Obviously the next question is, have we any evidence that similar lowering of fertility is responsible for the premature death of the developing embryo in man. I think the answer to this question can unhesitatingly be made in the affirmative though the evidence, in the very nature of the case, will be far less complete than that from controlled experimentation. In the first place the fact which I have already quoted that abortion is twice as frequent where the fertility is known to be low as where it is pre-

sumably about average in amount is strong corroborative evidence. Again, we have pretty complete records of both husband and wife in some 53 instances where one or more abortions were known to have occurred. In these cases it was possible to assign a probable origin to the particular factor or factors which had decreased fertility. Of the 53, the factor or factors producing the abortion seemed to be associated with low fertility of the male in 17 instances, and with low fertility of the female in 15. In the remaining 21 cases the cause of the abortion seemed to be uterine—either congestive, traumatic or nutritional.

Finally, in some 20 of these we have embryologic evidence as to the cause of the abortion derived from the examination of the actual specimens.* Excluding those cases where the cause of abortion was uterine—that is, where the fetus was still living at the time when abortion occurred—and those where the full fertility records of the parents were lacking, we have remaining 12 in each of which the abortion was due to defective germ plasm. These cases are similar to those reported by Huntington¹³ and to the large series reported by Streeter and Mall¹⁴ but the interesting feature in these is that here we have fairly complete records of the fertility of both parents. Of these 12, 3 showed definite low fertility on the part of the father. In 1 the cause of low fertility was constitutional, in the other 2 due to trouble in the prostate. With the 9 female cases it was more difficult to assign a cause for the low fertility though 2 were definitely anaemic. The others for some reason or other seemed to have produced eggs of low vitality.

The human evidence would not be complete without a more detailed reference to the remarkable work being carried on at Baltimore by Streeter and his predecessor Mall and their associates under the Carnegie Institution Department of Embryology. They have examined many hundreds of specimens and find a surprisingly large proportion of pathologic embryos. Of those occurring during the first month only 1/5 are normal and during the second 1/2, while during the third and fourth months 8/9 are normal and there are no abortions due to defective germ plasm during the latter half of pregnancy. They believe that malformations or monstrosities at birth represent cases where some localized anomaly has occurred in early development so slight as not to cause death of the embryo as in the cases where abortion has taken place. They also make the interesting observation that one-quarter of the women from whom their specimens came were sterile in the sense that they were childless. The much greater proportion of sterility among these women who have aborted

than among women in general is additional evidence that the occurrence of abortion often points to a low state of fertility.

From the evidence thus accumulated from human and animal sources it seems fair to conclude that a certain amount of prenatal mortality is common. This amount can be increased by submitting animals to adverse conditions such as exposure to the fumes of alcohol or putting them on deficient diets. Thus the percentage of embryos undergoing full development is an indication of the degree of fertility. In further confirmation of this it is interesting to note the fact that abortion is practically twice as frequent where the fertility is known to be low.

Thus far I have confined my discussion of the etiology of abortion to this one phase of the subject, which may be called the Defective Germ Plasm cause. This it should be noted may be either paternal or maternal. The other causes of abortion are in the nature of the case maternal only because they act upon the fetus indirectly through the uterus which contains it. These causes have been thoroughly investigated in the past and I shall do little more than mention them. They may be broadly classed under two heads—mechanical and nutritional. Under the first should be placed trauma, retroversion, certain cases of fibroids, severe lacerations of the cervix and so forth. Under the second should be classed all conditions interfering with the uterine function of nourishing the developing fetus. Here then should be placed infarcts of the placenta¹⁵, chronic passive congestion, etc. Here also belong those infected conditions of the uterine mucosa which interfere with the early imbedding and nourishment of the developing embryo. In this connection it is interesting to note the frequency with which Streeter and Meyer report the hydatid degeneration of the chorionic villi and the latter's theory that this degeneration is caused by the irritation of the growing villi by the endometritis. In other words, it does not seem improbable from their observations that a uterine condition can so alter the growth of an embryo as to cause its death and rejection. That this is not entirely theoretic is shown by the contagious abortion of cattle. This has been proved to be caused by an infectious endometritis of specific origin which is spread by an infected bull. There is even some evidence that the organism in question may be the same that causes Malta Fever in human beings.

Just recently Curtis¹⁶ has reported the occurrence of habitual abortion where focal infection could be demonstrated as a cause. From his experimental evidence infections of this kind would seem to act by setting up a secondary endometritis and thus interfering sufficiently with the nutrition of the developing embryo as to cause abortion.

In concluding this etiologic study of abortion

*I wish to express my thanks to Professor Streeter and his associates of the Embryological Department of the Carnegie Institution for the careful manner in which they have examined these specimens and the helpful diagnoses they have made.

it will be seen that much still remains to be done, but enough has been said to indicate the different points of view which have been developed recently through experimental evidence with animals and embryologic evidence with man.

The causes may be classed as—

1. Defective Germ Plasm (and this may be either maternal or paternal.)
2. Mechanical.
- or 3. Nutritional.

Finally, each case must be studied with the greatest care since prevention can only be based on thorough and more perfect understanding of causes. The whole subject is one of great economic and scientific importance and merits far greater attention than has been paid to it in the past.

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THE NEW ENGLAND PEDIATRIC SOCIETY

BOSTON, MASS., APRIL 10, 1925

KENNETH D. BLACKFAN, M. D., in the Chair.

Results of Sulpharsphenamin Therapy in Congenital Syphilis. Presented by Dr. Philip H. Sylvester.

Dr. Sylvester reported the treatment of sixty-four cases of congenital syphilis by sulpharsphenamin, which was injected intramuscularly with a dosage of 10 to 20 mg. per pound of body weight. A roentgenogram showed that early bone defects disappeared before the periosteum returned to normal.

DISCUSSION

Dr. Blackfan: I understand in the early cases that the lesions healed much more rapidly than in the older children. If so, is there any way by which we could make these children come to us for special treatment?

Gastric Analysis in New-Born Infants. Presented by Dr. Alfred T. Sohl.

The gastric contents of unfed new-born infants consists of gastric juice which contains free hydrochloric acid. The average pH is 2.6. The buffer value is 9.4 c.c. The volume is 4.5 c.c. At 5 days of age, test meals removed after one hour show an average acidity of pH 2.5, a buffer value of from 10 to 12 c.c. and a volume of 6.5 c.c. Similar values were obtained on the

tenth day. A capacity for gastric digestion is greater in new-born infants than later in infancy. Gastric digestion of 50 c.c. of partly skimmed cow's milk is practically complete in one hour. It would seem logical to feed new-born infants a more concentrated and more alkaline food.

MAY 8, 1925

DR. KENNETH D. BLACKFAN PRESIDING

DR. EDWIN H. PLACE read the first paper on "The Dick Test and Scarlet Fever Antitoxin," giving the results of work done with these products by himself and Dr. Adrian Boucart at the South Department of the Boston City Hospital. The Dick test he considered as a reliable method of determining susceptibility or immunity to scarlet fever. The Dick test becomes negative at varying lengths of time after an attack of scarlet fever, and almost immediately after the injection of antitoxin. Dick toxin produces a transitory rash with symptoms resembling those of scarlet fever, and immunity, as registered by the Dick test, develops within a very few weeks or days. Antitoxin, developed by the Dick's method of immunizing the horse with toxin, very speedily cures the symptoms of scar-

let fever, although it is no more efficacious than convalescent serum.

Dr. Benjamin White then talked on "Biologic Products and Scarlet Fever." The Dick test, he stated, has not been as satisfactory as originally claimed, and confusing results have been obtained with it. Active immunization produced by Dick toxin has frequently been found to be of short duration only. The Hygienic Laboratory in Washington has refused to license and standardize these products as yet. Dochez's method of immunizing horses for the production of antitoxin, by inoculating living cultures into an agar implantation is at least as satisfactory as the Dick method, and has been adopted by the Massachusetts Antitoxin and Vaccine Laboratory. A limited amount of antitoxin is now available, and within a few months sufficient will be available for general distribution.

DR. R. M. SMITH: I should like to ask Dr. Place what procedure he would recommend, either in a community, in a school or in a hospital if a case of scarlet fever occurred. Does he feel that at the present time all exposed individuals should be Dick tested? Who should be Dick tested? What should be done with those who have a positive Dick test?

DR. MORSE: I should like to know whether Dochez's serum has been used in active immunization as well as the Dick's serum.

DR. LEWIS W. HILL: How reliable is the immunization with antitoxin? How soon does it come on after the injection and how long does it last?

I also want to ask Dr. White what is the method of preparing concentrated serum?

DR. F. P. DENNY: I have been much interested in these two papers this evening. It is encouraging to know that the antitoxin is so effective, and even if the active immunization with the toxin does not work out, it seems to me a tremendous gain will be made with the use of antitoxin. As compared with diphtheria, scarlet fever is very much less severe as regards fatality. I think there are about one-third as many deaths in the state from scarlet fever as there are from diphtheria, and if that one-third can be much reduced by the use of antitoxin, this is most encouraging. We are not going to see so many neglected cases of scarlet fever as we see of diphtheria. The severe cases of scarlet fever are usually seen promptly and can be given antitoxin.

DR. PLACE: It is a little difficult to answer Dr. Smith's question. In the past in the face of an epidemic of scarlet fever we were compelled to use the quarantine measures. In other words, we only watched for subsequent cases. Now the question comes up whether we ought to do something active. Should we go ahead and culture that group and see how many are harboring the

scarlet fever streptococci and immunize those persons afflicted? I think we should give antitoxin to those ill with scarlet fever, apply the Dick test to all exposed persons and immunize the positive cases and then wait and see what happens. We have strong evidence that the antitoxic serum is a protection against scarlet fever.

If the school really wants to do something more than the old practice of watching, a Dick test can be done and then immunize the positives. The important fact, however, is to find the source of the infection. An individual may be infectious for long periods of time.

I think I feel a little more optimistic about this whole subject of scarlet fever than Dr. White does and I think all we can do is to continue what we are doing and record our observations.

As regards Dr. Morse's question as to whether we used Dochez serum as well as Dick's serum, we have used both and have obtained the same results.

In regard to Dr. Hill's question, the immunity as shown by the Dick test has proved to be from five to eighteen weeks. We do not know how long it lasts.

As to whether the immunization with antitoxin in scarlet fever cases is reliable, I think it is. I think we have a great deal more work to do on this before we can come forward and say that this or that fact is absolutely so.

DR. PLACE IN CLOSING: We cannot say for sure that the Dick test is a measure of immunity. To be absolutely sure of this fact we would have to observe the persons who had been tested for a long period of time. Of course, the ideal thing would be to get large numbers of people, Dick test them, and inject scarlet fever serum into those who were positive and watch these persons for a long period of time as the Dicks did in some instances. In that way we would soon find out whether the Dick test was a real measure of immunity or not. I think it is going to be interesting to watch the nurses immunized with scarlet fever serum and see if they come down with the disease. If at the end of ten years these nurses, who were injected with scarlet fever serum, do not become ill with the disease, this observation will be of some value.

There is a great variation in the reaction in different individuals. In looking over the records of those persons who have had the Dick test it is interesting to note how the mild cases remain mild and the severe cases remain severe.

DR. WHITE: In regard to Dr. Hill's question as to how the scarlet fever antitoxin is concentrated, I would say that the method used is the same as that used for the concentration of diphtheria antitoxin—that is by salting out the pseudoglobulin and freeing it from fibrinogen, euglobulin and albumin through ammonium sulphate precipitation.

**Case Records
of the
Massachusetts General Hospital**

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11291

MEDICAL DEPARTMENT

An unmarried German housekeeper of thirty-nine entered April 9 complaining of dyspnea. She had in general been healthy except for the present illness. At seventeen she was ill in bed two weeks with rheumatic fever involving only the wrist joints. After this illness she had slight dyspnea on exertion. At twenty-nine she became very weak, dyspneic and orthopneic and was sent to a hospital where she stayed for six weeks. After two weeks in bed she felt strong again, and by the time she left the hospital she could sleep flat and do her housework. The summer before admission she had what she called a nervous breakdown, caused her doctor said by overwork. She was very tired, nervous, homesick and unhappy, could not sleep, and on one occasion fainted on the street.

Examination showed a fairly well nourished woman. The teeth were carious. There was slight pyorrhea. The throat was reddened. On the soft palate were six or seven petechioid spots, one suggesting submucous hemorrhage. Fine râles were heard at both apices and throughout the whole right chest, and coarse moist râles at both bases. There was dullness at the left base. The voice and breath sounds were increased just below the angle of the left scapula. The heart was enlarged. The location of the apex impulse and the midclavicular line are not recorded. The left border of dullness was 10.5 cm. from midsternum, the right border 4.5. The supracardiac dullness was 6 cm. The action was regular. The sounds were of good quality. The pulmonic second sound was reduplicated and accentuated. The first sound at the apex was increased and followed by a loud rasping systolic murmur. The second sound was barely audible. The rapid action made it difficult to elicit any diastolic murmurs. There was a thrill at the apex. The blood pressure was 146/70 to 90/50.

The temperature was 98.4° to 104° with a terminal drop and rise, 95.8° to 99.8°. The pulse was 90 to 160, the respiration 20 to 55. The urine showed a slight trace to the slightest possible trace of albumin at all of five examinations. The specific gravity was 1.022 to 1.032.

The amount was 80 to 70 ounces April 19 to 20, normal on the occasions recorded later. The renal function was 5 to 45 per cent. The hemoglobin was 70 to 50 per cent. There were 13,500 to 10,100 to 44,200 leucocytes, 77 to 75 per cent. polynuclears, 3,856,000 to 3,152,000 reds, with moderate to considerable achromia and variation in size and shape and occasional polychromatophilia and stippling at one of two examinations. Two large mononuclears were thought probably endothelial phagocytes. Special search at four later examinations showed no endothelial phagocytes. A Wassermann was negative. Two blood cultures showed non-hemolytic streptococcus. The non-protein nitrogen was 32 milligrams. The sputa showed nothing characteristic at one examination, many leucocytes and loaded with influenza bacilli, chiefly extracellular, at another. X-ray of the chest was not entirely satisfactory because of motion. Both lung fields appeared somewhat large. The ribs were transverse and the chest appeared to be of the emphysematous type. The diaphragm was visible on the right, the outline obscured on the left. The heart shadow appeared to be increased in the transverse direction. There was also prominence in the region of the left auricle. Owing to the condition of the patient it was impossible to make the usual cardiac examination.

The morning after admission there was definite Broadbent's sign. Two days later there were petechiae on the eyelids and cheek. April 13 there were four or five on each hand. An oculist found several large flame-shaped hemorrhages, one preretinal, in the right eye. The left eye was normal. New petechiae continued to appear. Nevertheless the patient showed slight improvement April 29, and May 1 sat up in a chair. After this she declined, and May 6 died.

DISCUSSION

BY DR. WILLIAM H. SMITH

NOTES ON THE HISTORY

This case was in my ward, so that I shall have to let you make the diagnosis. I did not see the patient, but I recall the possibilities. So all I shall do will be to point out to you the essential things. There is no difficulty about the diagnosis. It reads itself. All I shall attempt to do will be to show how the facts in any given case will fit in if the diagnosis is correct.

It is interesting at times to put on the board a series of numbers, and then put the facts and add to those facts the symptoms that could agree with the diagnosis.

- | | |
|---------|----------|
| 1. | positive |
| 2. | positive |
| 3. | positive |
| 4. | positive |

It is quite striking how oftentimes every fact is explained and every symptom is clean-cut and definite. That is what we call a "locked diagnosis." Now this case locks itself. Such cases are not so interesting as those in which we have to search around and discard and differentiate and balance.

One would automatically say, rheumatic fever at seventeen leaves as a possible legacy chronic endocarditis, perhaps a fixed pericardium. One would infer a dyspnea at seventeen made possible a chronic endocarditis from her previous rheumatism. At twenty-nine there is further evidence of a damage to the endocardium, progressive, limiting her activities.

From the fact that she became able to lie flat and do her own housework one can infer that she did not have an extreme grade of shutting down of the mitral or aortic valve, because where there is an extreme stenosis it is difficult for a person, when the heart has become stretched, even after rest to assume a perfectly flat position without dyspnea. Put it the other way: many times in the history of a case one will say, this is a shutting down mitral valve, progressive dyspnea and orthopnea, limitation of the field of response and of activity, all suggesting a mechanical factor. Where we find this progressive dyspnea we assume the stenosis to be very great, the mechanical limitations excessive. We do not expect to gain in such a case because it is a closed book. We cannot say that in the present case because the response to rest was so great, and the fact that she could lie flat after her rest in the hospital shows that her compensation was restored.

Her fainting does not necessarily point to any cardiac difficulty. It may have been the so-called "effort syndrome" or a real nervous fatigue state.

NOTES ON THE PHYSICAL EXAMINATION

The fine râles at the apices of the lungs may have been the manifestations of a partial atelectasis. They were not associated with anything to suggest phthisis. The coarse râles at the bases may have been the so-called wet lungs from passive congestion, or there may have been a real infection of the bronchial tract in this case, because the examination of the sputum showed "many leucocytes, loaded with influenza bacilli, chiefly extracellular." In other words she may have had, associated with her endocarditis, chronic bronchial infection, and the coarse râles at the base may have been an exacerbation of the chronic pulmonary infection, perhaps associated with weakening of the heart, the so-called passive congestion. Where we have dullness, it may occur in extreme passive congestion, but one looks for pathology in the presence of a heart condition more like an infarct; or, if we assume an infection of the lung, the possibility that there may have been a small patchy pneumonia. The in-

creased voice and breath sounds are consistent with infarction, consistent with a small patchy pneumonia.

One would expect, with this history, that the heart would be enlarged. We have inferred that there was damage to a heart valve years ago, and we assume that any damage of any extent to the heart valve is associated with cardiac hypertrophy. The history does not state how far beyond the midclavicular line the dullness extends. We do not know definitely from percussion whether the heart was enlarged to the left or not. We assume that it must have been, because a 4.5 cm. enlargement to the right is present.

It is possible, if there were a sufficient amount of fluid at the left base, that the heart may have been dislocated to the right, giving an apparent enlargement which really was due to dislocation.

Six centimeters of supracardiac dullness is practically normal. We may consider what inferences we are to draw from that. There cannot be very marked left auricular enlargement. There may be some, but usually where we have left auricular enlargement the tendency is for the supracardiac area of dullness to be increased.

In the heart examination we have an indication of damage to the mitral valve,—a systolic murmur, a sharp first sound—consistent with chronic endocarditis of the mitral valve. Is the etiology correct? Yes. Is the age of the patient correct? Yes. Is the history correct? Yes. Are the findings correct? Yes. Then we shall expect endocarditis of the mitral valve. We have four positives, + + + +.

She had a temperature more or less continuous, a persistent tachycardia, an increased respiratory rate.

With a gravity in the urine of 1.022 to 1.032 one can deduce that there can be no chronic nephritis in the case. A trace of albumin in this type of case may be due to passive congestion, to acute glomerulonephritis, to infarction of the kidney. Those are the three chief pathological conditions, judging from the rest of the case.

It should be remembered that diminution of the renal function occurs in extreme grades of passive congestion. A kidney that can put out forty-five per cent. renal function is not usually a kidney that is the seat of chronic renal disease.

A leucocytosis is now added to the continuous fever, to the rapid pulse rate, to the dyspnea or rapid respiration; another +.

With a count of seventy-seven per cent. polynuclears and a diminution in the red cells an anemia is now added to the temperature, the rapid pulse rate, the rapid respiratory rate and the leucocytosis. Associated with this is a secondary anemia or an anemia which is atypical. In fact, in some instances an anemia sim-

ulating a primary anemia may occur in certain cases of endocarditis, and the presence of endothelial phagocytes increases the possibility of there being a fresh endocarditis. So that we associate the blood in terms of sepsis probably endocardial. Is the blood picture correct? Perfectly. Another +.

The finding of phagocytes is peculiar. I remember bringing a blood smear from Bangor and finding these phagocytes, and telegraphing to have more blood sent down. It arrived the next day and there were no phagocytes. In other words, the presence of endothelial phagocytes in the presence of sepsis or endocarditis is very difficult to estimate. We find them, and in one day or in one hour they are gone. I think they are more apt to be present when emboli are more frequent.

We noted that at the first examination petechiae were found on the soft palate. The presence of petechiae with temperature, leucocytosis, secondary anemia in a patient who has had a chronic valve infection makes probable a fresh valve infection, in other words an acute endocarditis.

From the blood culture we have the positive evidence of sepsis.

The non-protein nitrogen is normal and should be attached to the forty-five per cent. renal function, not to the five per cent. renal function.

It would be interesting to know whether the sputum came from the bronchi or from the nasopharynx. She may have had sinuses or she may have had bronchiectasis. The etiology is correct for either.

We have the X-ray plate showing the ribs. It is not a very striking chest, a rather long chest, not a very marked cardiac enlargement. Emphysema is apt to occur in association with chronic bronchitis, and chronic bronchitis would give us the sputum which was here recorded. It will be interesting when Dr. Richardson reports the result of the necropsy to note the presence or absence of peribronchial thickening. I see no marked evidence of it in the X-ray plate, but the associated emphysema and the presence of the influenza bacillus in the sputum make a bronchial focus likely. We remember that there was dullness at the left base. The question of fluid came up, the question of an extreme passive congestion. We remember that the voice sounds were increased. I shall speak of that a moment later when we come to consider the so-called Broadbent's sign here recorded.

There is not very much prominence in the region of the left auricle. I spoke of that as a possibility in increasing the supracardiac dullness. One would infer from this that the degree of stenosis in this case was not very extensive.

Broadbent's sign is a systolic retraction of the intercostal spaces in the left back. That may come from thickening of the pleura. There

is something going on in the left base and it will be interesting to note whether Dr. Richardson says anything about adhesive pericarditis or pleural pericardial adhesions. Is the etiology correct for adhesive pericarditis or pleural pericarditis? It is. We may have Broadbent's sign with a simple pleural fibrosis based on pulmonary infection. So whether or not this is adhesive pericarditis in this case we cannot state. It would be unusual if there are extensive pericardial adhesions to have a heart not more than 400 grams in weight.

The tips of the fingers are wonderful places to find the petechiae of endocarditis. We should look on the fingers, toes, conjunctivae, tip of the uvula, inside the cheeks.

DIFFERENTIAL DIAGNOSIS

I have made a note of dyspnea at seventeen, legacy endocarditis; at twenty-nine a failure of compensation; at thirty-nine a nervous break, petechiae, apical râles, a question of atelectasis, passive congestion; no evidence for phthisis; a question of infarct of left base, passive congestion, possibly thickened pleura; heart increased to right, no marked left auricular enlargement; the sharp murmur with thrill characteristic of mitral disease; blood pressure unimportant; continuous temperature, rapidity of pulse rate; a kidney functioning with 32 mm. non-protein nitrogen, renal function 45; leucocytes, secondary anemia, endothelial phagocytes; positive blood culture; influenza in the sputum on one occasion; positive Broadbent's sign. Those are the things we have to fit into our diagnosis.

If we start with a chronic endocarditis—and I do not recall a subacute bacterial endocarditis which was not engrafted on a chronic infected valve—we have the etiology in the chronic endocarditis. We have a regular fever, which is consistent. We have leucocytosis, which is consistent. We have anemia, which is consistent. We have emboli, which are consistent. We have a blood culture positive. We have endothelial phagocytes, consistent. We have renal irritation, which is consistent. It might be of the glomerular type, might be infarction, might be passive congestion. We have pulmonary pathology, not a passive congestion, possibly a bronchial infection with or without adhesions between the pleura or pericardium, or marked thickening at the left base. There is probably no evidence of tuberculosis, the apical râles being atelectatic. We have increased measurements by X-ray, the possibility of auricular enlargement, a possible Broadbent. There is not a thing in the case which could not be explained by chronic endocarditis, septicemia with fresh endocarditis,—not a symptom. It breeds true. It locks, it has to stand.

The only interesting question is as to the degree of pulmonary pathology at the left base, the possibility of adhesive pericarditis, the pos-

sibility of there being a very early form of glomerulonephritis, because the etiology suggests that as a possibility.

X-RAY INTERPRETATION

The findings suggest mitral disease with possibly a small amount of fluid at the left base.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Rheumatic heart disease.
Mitral stenosis and regurgitation.
Subacute bacterial endocarditis.
Pulmonary infarcts, left.

DR. WILLIAM H. SMITH'S DIAGNOSIS

Chronic and acute endocarditis of the mitral valve.
Chronic adhesive pericarditis?
Hypertrophy and dilatation of the heart.
Chronic passive congestion.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesions

Chronic and acute endocarditis of the mitral valve.
Purulent pericarditis.

2. Secondary or terminal lesions

Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Hydrothorax.
Slight ascites.
Infarcts of spleen and kidneys.
Soft hyperplastic spleen.

3. Historical landmarks

Slightly defective closure of the foramen ovale.
Chronic pleuritis.

DR. RICHARDSON: We were not permitted to examine the head.

The gastro-intestinal tract was negative except that it showed passive congestion. The liver was nine centimeters below the costal border.

Each pleural cavity contained a large amount of thin pale clear fluid. On each side were numerous old pleural adhesions. The lungs showed well marked passive congestion and in the region of their lower halves there was much atelectasis of the compression type.

The pericardium contained 100 c.c. of thin purulent fluid and the layers were stuck together by a thick purulent exudate.—purulent pericarditis. The heart weighed 415 grams. That for her was considerably enlarged. The myocardium was five millimeters on the right—that is thick—and on the left twelve millimeters. The dilatation of the heart at the time of necropsy was slight in the ventricles and very

well marked in the auricles. The auricular appendices were negative. In these cases of mitral disease not infrequently we find thrombi in the ears of the heart. The aortic, tricuspid and pulmonary valves were negative, but the mitral valve showed a thick row of vegetations extending along its free margin and continued upon the auricular wall as a rather thick broad patch of vegetations. In places these vegetations extended down along the chordae tendinae, giving to them a beaded appearance. The circumference of the mitral was ten centimeters. That is about the usual circumference, but of course there was more or less obstruction from the mass of vegetations on the valve. At the base of the vegetations the process was older, firmer, more fibrous. This of course was continued outwardly as soft grayish-brown fresh vegetations. So that we have a chronic condition at the base on which was erected an acute condition.

The coronaries were free and negative. The spleen was considerably enlarged, showed several infarcts, and there were many infarcts in the left kidney and several in the right. The infarcts in the right kidney were somewhat older than those in the left, indicating of course that they came off sometime, the one before the other. The microscopic examination confirmed the macroscopic appearance,—a typical picture of this disease.

CASE 11292

CHILDREN'S MEDICAL DEPARTMENT

A one-year-old boy entered the hospital March 22 for study. He was healthy at birth and was breast fed every three hours for six months, then put upon imperial gramin until he was ten and a half months old. After this he was put on a milk and water formula until the past month, when he had been put back on the imperial gramin. At four months he was started on orange juice. For a month he had had codliver oil, cereal, broth and zwieback.

Six weeks before admission the child began to lose energy and for a week had poor appetite. From the onset his hands were very red and swollen, though not tender. In three weeks they began to peel in flakes, especially the palms and fingers. At the same time a patch of erythema the size of the palm of the hand appeared on the abdomen, remaining about a week. For the past week the child had grown weaker. During the past four days his bowels had been extremely constipated. Even with catharsis the stool was small and hard. The day before admission there was blood in the stool. The child perspired profusely at night, particularly about the head. He had lost some weight. Since the onset he had been under medical care. Pirquet and lumbar puncture were negative.

Examination showed a fairly well nourished child twisting his body constantly but slowly from one side to the other. Several times during the examination there was erection of the penis. The face was expressionless. The anterior fontanel was nearly closed. There was profuse perspiration about the head. The palms of the hands and the soles of the feet were cherry red and desquamating. Above both ankles and over the lower abdomen was a fine macular erythematous rash. The throat and tonsils were red and inflamed. The muscles of the extremities were flabby and flaccid. There was dullness over the right base posteriorly. The abdomen was soft. Several round nodular masses were felt in the left lower quadrant. Many of these disappeared with the following stool. There was wide distasis of the recti with herniation of the abdominal contents upon straining. The pupils were normal. The reflexes were sluggish.

The temperature was 101.5° to 108° from admission to March 31, afterwards 98° to 103°. The pulse was 104 to 180, the respiration 27 to 88. The urine was pale at eight of nine examinations and showed a trace of sugar at one. The quantity was insufficient for a specific gravity test. At admission the hemoglobin was 75 per cent., the leucocytes 27,800, the polynuclears 53 per cent., the reds 3,300,000 (?), microscopically normal. Five later counts showed 36,200 to 29,400 leucocytes, two others 9,200 and 15,000. Later red counts were normal. May 2 the hemoglobin was 95 per cent. A Wassermann and a Schick test were negative. March 23 intradermal tuberculin was 1:5000, negative, April 1 1:1000, negative. Lumbar puncture March 23 gave 4 c.c. of reddish yellow fluid, initial pressure 80, hydrodynamics normal, red cells 5,960, white 11,000, culture sterile, Wassermann negative. April 17 another puncture gave 3 or 4 c.c. of crystal clear fluid, initial pressure 70, respiratory excursion practically negligible, no increase in pulse on pressure over the jugular, total protein 17, globulin negative, culture sterile, cell count 262 red cells, no white cells.

A skin consultant explained the condition as a toxic erythema suggesting infection rather than a drug eruption. A nerve consultant deferred his opinion for serological information, and raised the question of pellagra. A syphilis consultant saw no evidence of syphilis. All anaphylaxis tests to protein were negative. An oculist found the fundi normal.

There was no apparent change in the child's condition until early the morning of March 25, when the temperature suddenly rose to 108°. The child was drowsy but squirmed about in the bed as if he were itching, and grunted a little now and then. The left upper eyelid appeared to droop slightly. The morning of the 26th he refused fluids and food. He was fed by stomach tube. March 30 the temperature was 101° and he was less drowsy. The redness of the palms

and soles was somewhat less. Priapism was still frequently observed. April 4 he took part of his feeding by mouth and seemed brighter. The temperature was down to 99°. The hands and feet were still somewhat red. April 9 there was diarrhea with watery stools, at first yellow, then greenish. The formula was changed to one with a lower percentage of sugar. There were a few red blotches on the right thenar eminence. Two days later the left ear drum was red and bulging. Paracentesis was done. Pus was obtained under pressure from both ears. The temperature was 101° to 102.4°. The left ear drained freely. The diarrhea continued. The pharyngeal mucous membranes and tonsils were red and injected. The child was a little restless but played and at times cried lustily. The tonsils were enlarged, particularly the right, with general faucial injection. The child again became drowsy. The lumbar puncture April 18 revealed nothing new. There was marked fissuring around the anus. He ate well, but grew distinctly more sleepy and listless. During the taking of blood for a Wassermann April 20 he did not cry at all, and barely squirmed. That evening the right ear drum was red, with bloody scab and some bloody ooze immediately over the attachment of the malleus. At paracentesis only blood was obtained. Culture from the discharge from both ears showed staphylococcus aureus. April 23 both ears were discharging and the temperature was 101.8°. The child seemed more active and wide awake and ate well. He had ceased to gain weight, though he took food well except milk, which had to be forced. There were a few small reddish vesicular-like areas on the hands and the fingers and some tiny red punctate areas between the toes, perhaps urticarial, perhaps the reappearance of the original condition. Both ears drained profusely, bloody serous material with shreds of pus in the discharge from the left. Behind the right ear was a small pea-sized palpable gland. An ear consultant made a diagnosis of subacute otitis media. April 29 both hands and feet were again peeling, the ears were draining less profusely and the child was taking food moderately well. The temperature was 99.6° to 100°.

April 30 the tonsils and adenoids were removed. Two days later the lesions on the hands and feet were subsiding and the peeling was becoming marked. Examination of material from a papule on the foot showed no fungoid focus. Tube feeding was no longer necessary, but the feeding had to be forced. The general condition seemed somewhat poorer; the child seemed more listless than he had been for some weeks, his flabbiness seemed more marked, and he seemed to scratch himself more than he had for some time. The acute hemorrhagic vesicles were subsiding. He continued to make steady slow improvement. May 18 a third intradermal tuberculin 1:100 was negative. At his discharge May 20 the general condition was markedly

improved. He laughed occasionally. The condition of the hands was approaching normal. In spite of a slight loss of weight and increase of temperature during the past twenty-four hours it was felt that he would do better at home. Since his return home his parents have written that his convalescence has progressed satisfactorily.

DISCUSSION

BY DR. FRITZ B. TALBOT

When this patient first entered the hospital there was considerable discussion among the staff as to whether he had encephalitis or not. This question arose because of the queer actions of the child, the apparent sluggishness of the intellect, and the weakness of the muscles. This, however, was ruled out by the absence of any neurological changes and of neck sign. The lumbar puncture did not give any definite information because the fluid was tinged with blood. The progress of the disease showed that it was not encephalitis; there were many features about it which could not be explained by this diagnosis.

The diagnosis finally resolved itself into acrodynia, which has been called by other names, such as epidemic erythema and erythroedema and pink disease. Although the name acrodynia is not a good one, yet it seems at present to be the best available. The disease was probably known in the latter part of the sixteenth century. There was an epidemic in France which commenced in 1828. It was not well recognized in America until about 1920, when Bilderback recognized and reported a series of cases. The disease has been seen in Europe, India, Northern Africa, Canada, the United States, Mexico, Australia and New Zealand. It has not as yet been recognized in other parts of the world.

Its etiology is unknown, but it is frequently associated with some other disease. In fact its relationship to influenza epidemics has made many observers connect it with this disease. Focal infections such as nasopharyngeal infections or infections of the ear are frequently found, but there is no proof that these infections are of any etiological importance. The season and climate have no etiological bearing, and it is thought that the disease is not contagious.

The diagnosis is not difficult after one has once seen an advanced case, although the disease has many features in common with pellagra. Acrodynia occurs at any season of the year, while pellagra usually commences in the spring or autumn. The mind is not affected in the former, but in the latter insanity often occurs. Acrodynia does not recur, while pellagra usually does. The distribution of the rash on the hands is characteristic. In acrodynia it is more pronounced on the hands and fingers and gradually fades off until it disappears above the wrists, while in pellagra there is a sharp line of demar-

cation on the forehead and legs. The dorsal surfaces of the feet are seldom involved in the former and are usually involved in the latter. An erythematous rash may appear over various parts of the body in acrodynia and rarely if ever does in pellagra. One of the most distressing symptoms of acrodynia, which is not present in pellagra, is intense burning and itching over the palms and soles and sometimes the whole body. Diarrhea, which is usually not serious in the former, is often obstinate in the latter. Mortality in the former is usually low and in the latter high. Photophobia is marked in the former and usually absent in the latter, and finally a child with acrodynia is very wretched and miserable, with practically no appetite, while one with pellagra is not so and usually has a good appetite.

The most characteristic symptoms of pellagra are called the three D's—dermatitis, diarrhea, and depression, while those of acrodynia are called by Bilderback the six P's—pain, pink hands and feet, peeling, prostration, paresthesia and perspiration. (Jour. A. M. A., 1925, 84:495.) When acrodynia has once been recognized it will probably never be missed again even before the rash appears on the hands and feet, because the actions of the child are characteristic.

The symptoms are very characteristic. The onset may be abrupt or very gradual, and as a result the diagnosis may not be clear for several weeks. The child at first becomes peevish and fretful, loses its appetite, and sleeps poorly. Then the hands and feet become red and swollen and there is intense itching. A rash may appear on any part of the abdomen and sometimes on the head. As soon as this appears there is desquamation of the hands and feet. The desquamation may be deep enough to involve all the layers of the skin. The eyes are irritated and very sensitive to light. The appetite is very poor and the patient may become pale and emaciated. As a result the muscles become flabby and the patient can no longer walk. He usually lies with his face buried in the pillow to shut out the light, which hurts the eyes. In some instances, when the disease progresses, the teeth may fall out. There may be complications in the nasopharynx, ears, lungs, or kidneys, and the disease is frequently accompanied by a high temperature, especially when there are complications.

The laboratory findings are not helpful. The Wassermann, spinal fluid, skin tuberculin, and blood cultures are all negative.

The prognosis is usually good, as it was in this case, although the child may die of whatever complication may be present. Infection of the lung is especially to be dreaded. The course of the disease is usually weeks, during which period the child is very miserable and difficult to care for.

The treatment is symptomatic because the pathology and etiology of the disease are not

known. First and most important is to see that enough food is got into the child. Usually it has to be administered by gavage. The itching and irritation are best relieved by applications of cold calamin lotion. When these are relieved the insomnia and other distressing symptoms usually are of little importance. Any complication that may be present should be treated in the ordinary way. If there are obviously infected tonsils accompanied by otitis media they should be removed, as in any child. Improvement in the general condition frequently follows operation. This however is not always the case. In some instances the disease progresses unaffected by operative interference; consequently tonsillectomy should not be recommended except where the indications for it are clear.

CASE 11293

SURGICAL DEPARTMENT

An American shoe cutter of seventy-two, formerly a fire department captain, entered February 25 complaining of diarrhea and pain in the rectum. One sister died of cancer of the stomach, one of shock, and one died insane at the menopause. His wife had had two or three miscarriages. He had taken an occasional drink all his life, but never was intoxicated. His past history was negative except for two fractures of the leg, a broken shoulder, and cuts of the head and legs while doing fireman service, and difficulty in starting the urinary stream with severe burning ten days before admission. He still had slight burning.

Four months before admission, when feeling perfectly well, he drank a glass of beer which had stood twenty-four hours in a tin pitcher. Within a few hours he was seized with violent diarrhea, eight to twelve very small stools a day, at the onset inky, afterwards usually light colored, but at times very dark. Since the onset he had had severe pain in the rectum made worse by straining. The desire to defecate was a sense of distension of the rectum, very sudden and urgent, and was relieved often by the passing of only a teaspoonful. He had grown very weak and had lost forty-six pounds during the four months. He had been on a very strict diet, chiefly of milk.

Examination showed an emaciated old man with pale, dry, inelastic skin showing numerous small hemangiomas on the torso. The sclerae were slightly icteric. The mucous membranes were pale. The few remaining teeth were loose and decayed. There was pyorrhea. The lungs were hyperresonant, clear, with slightly increased signs at the right hilus region behind. The heart was not remarkable. There was a slight systolic murmur at the base, heard also in the axilla. The arteries were hard and tortuous. The blood pressure was

110/70. The liver dullness extended from the fifth rib to nearly the level of the umbilicus, where a hard, irregular, nodular edge was felt. The low edge was believed to be partially due to ptosis. Rectal examination showed a hard constricting lesion, exquisitely tender, just inside the external sphincter. There was no blood on the examining finger.

Before operation the temperature was 98° to 99.6°, the pulse 80 to 116, the respiration 20 to 29. The amount of urine was 38 ounces, the specific gravity 1.020 to 1.026. There was a slight trace of albumin at two of three examinations, a trace of bile at one, sugar .001 at one. The hemoglobin was 70 to 75 per cent., the leucocytes 19,000 to 16,500, the polynuclears 66 per cent., the reds 3,600,000 to 4,000,000, with slight to moderate central achromia. No Wassermann is recorded. The non-protein nitrogen was 28 mgm. The bleeding time was three minutes, the coagulation time 18 minutes for three tubes, the fourth tube 21 minutes. Clot retraction was very slight in one hour, slight in three hours, moderate in eighteen hours. The clot in three hours was friable, in eighteen hours slightly friable. The serum dilution was 1:50.

A barium enema showed a large irregular filling defect beginning at the junction of the rectum and the sigmoid and extending up about one third of the sigmoid. (See Plate 1.) The patient could not retain the enema, therefore the remaining part of the sigmoid, the descending transverse, and ascending colon could not be examined. The lung fields were large and bright and appeared normal except for moderate increase in the hilus shadow and the descending branches of the bronchi. The heart shadow was not increased in size. The aorta was a little prominent in the region of the knob.

March 3 operation was done. The patient made a good recovery from anesthesia and showed very little reaction to the operation until March 8, when he was somewhat irrational. The wound was in good condition. His strength failed. March 11 he had a movement which contained a large amount of fresh blood. March 12 there was considerable inflammation about the wound. He seemed restless and somewhat dyspneic. No signs were found in the chest. March 13 he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

I presume "shock" means cerebral hemorrhage.

The *post hoc propter hoc* argument is very unfortunate. Patients look back to something they have eaten and therefore an acute appendix is often neglected. I think there is no question but that this man laid his trouble for a good many weeks to that beer. As we look back on this story it seems very hard for us not to make the diagnosis of cancer of the lower bowel.

The examination bears out the belief that the history gave us that this is some trouble in the lower colon. What was felt by the examining finger does not prove carcinoma, but is very suggestive of it.

Of course this is stricture and in view of the

a positive Wassermann, and the original cause of the ulcer that may have caused the stricture is so far in the past that we cannot say anything about it. I have been interested in having two syphilographers tell me that they also feel that the mere fact of a stricture plus a positive Was-



PLATE I. Barium enema. Shows a large irregular filling defect beginning at the junction of the rectum and sigmoid and extending up about one-third of the sigmoid. The patient could not retain the enema, therefore the remaining part of the sigmoid, the descending, transverse and ascending colon could not be examined. The film is defaced.

miscarriages of his wife it might have been a question whether it was syphilitic. As a matter of fact stricture is just a scar tissue, and scar tissue is the result of an old injury. It has seemed to me that the possibility of making a diagnosis of a specific stricture of the rectum is pretty far-fetched, because there is no reason why a man might not have both a stricture and

sermann does not necessarily mean that that stricture is syphilitic. It may be due to any other cause which in the beginning caused ulceration. Here with the story in the background it seems as though it must have been a slow-growing carcinoma of the rectum, and if that examination of the liver is as described then with metastases to the liver. It has often hap-

pened, though, that the wish is father to the fact; and the feeling in the mind of the person examining that this person ought to have metastases would make him feel something which in fact was not there.

The only thing that I see here that is grossly abnormal, other than the moderate achromia which ought to go with malignant disease, is clot retraction. I do not know what that means.

DR. CABOT: It is one of the factors of coagulation. It has no diagnostic significance.

DR. YOUNG: I do not see anything to do except an exploratory to see whether in fact this thing is operable. If it is it seems to me there would be some question whether a colostomy would do him any good. He has lost a great deal of weight and is not long for this world, and it is a question of doing the thing that will make him most comfortable. If there is no evidence of metastasis there may be a question whether excision can be done.

X-RAY INTERPRETATION

The findings are those of a lesion in the proximal portion of the sigmoid, probably malignant. There is no evidence of metastasis in the chest.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Carcinoma of the rectum.

PRE-OPERATIVE DIAGNOSIS

Carcinoma of the rectum.

OPERATION

Gas-ether. Rectal examination under ether showed a large hard annular growth fixed to the hollow of the sacrum about two and a half or three inches above the anus. The lumen was much contracted, but admitted four fingers. Through a high left McBurney incision the abdomen was explored and showed extensive involvement of the liver and nodular masses of the visceral peritoneum of the pelvis. The upper margin of the primary growth was not palpated. There was a slight amount of free fluid present. A loop of sigmoid was brought out of the wound and the mesentery separated below the loop. The sigmoid was sutured to the peritoneum and the wound closed.

FURTHER DISCUSSION

Apparently their belief was, in spite of the size of the lumen, that he would be more comfortable with colostomy, so they brought a loop out to do that.

Of course with the mass of carcinoma he is entitled to die from that alone. But any abdominal operation with this amount of handling of the bowel may result in peritonitis when the field is so thoroughly prepared for it by poor general condition as this was, and even without

any signs to show for it Dr. Richardson may tell us that there is a spreading peritonitis.

DR. RICHARDSON: Was that material from the colostomy?

DR. YOUNG: No, the record says by rectum.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the rectum.

Colostomy.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Carcinoma of the rectum.

Colostomy.

Peritonitis?

ANATOMICAL DIAGNOSIS

1. Primary fatal lesions

Adenocarcinoma of the rectum with metastases in the retroperitoneal glands, liver, adrenals and left lung.

2. Secondary or terminal lesions

Colostomy.

General peritonitis.

Fibrinopurulent pleuritis.

Edema of the lungs.

Slight arteriosclerosis.

Wet brain.

3. Historical landmarks

Slight chronic pleuritis, left.

DR. RICHARDSON: The brain tissue was wet. It is well to examine the brain tissue when we can in these cases of malignant growth of the intestine, because sometimes they metastasize to the brain.

There was a frank general fibrinopurulent peritonitis. The sigmoid was sutured in the abdominal wall for the colostomy. The margins of the wound in the abdominal wall showed considerable purulent infiltration. In the region of the lower end of the rectum there was an interruption of its continuity, and it opened into a mass of pus-infiltrated necrotic tissue showing evidences that looked like new growth. It was new growth. From the condition of things found at necropsy it is possible that he had passed a portion of his new growth at the time of the movement mentioned.

The retroperitoneal glands were moderately enlarged and infiltrated with new-growth-like tissue. The pleura was coated in places with fibrinous exudate. We often find pleuritis more or less purulent with general peritonitis. Of course there are two ways that can come, by the blood or through the lymphatics of the diaphragm. In the left lung, in the upper part of the lower lobe, toward the root of the lung just beneath the pleura were a few nodules of new-growth-like tissue two cm. across. They

were nodules of adenocarcinoma. (See Plate II.)

The heart weighed 275 grams, the valves and cavities negative. The coronaries showed considerable fibrous and fibrocalcereous change in places, but with no definite diminution of the lumen. The aorta showed a slight to moderate

The liver weighed 2580 grams,—moderately enlarged. The surfaces and substance showed numerous masses of new growth tissue, smaller and larger, some of them nine cm. across.

Microscopic examination showed the tumor to be an adenocarcinoma with the rather unusual metastases mentioned.

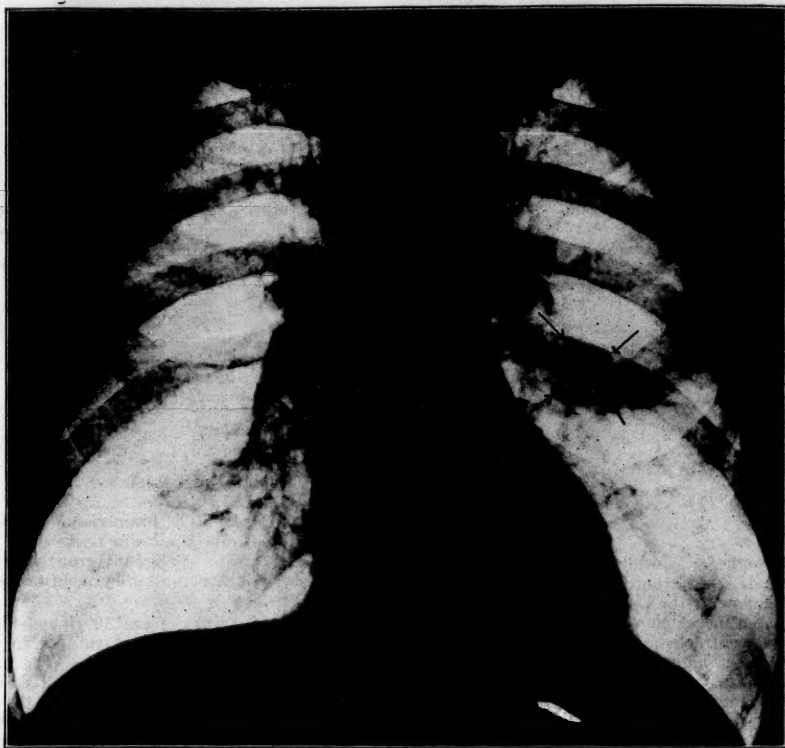


PLATE II. Shows the metastases found at necropsy.

amount of fibrous sclerosis, and there was some fibrous sclerosis in the great branches,—all told a slight amount of arteriosclerosis.

The right adrenal was enlarged, 8 by $3\frac{1}{2}$ by $4\frac{1}{2}$ cm. In the section surfaces we found pale new growth tissue which largely replaced the adrenal tissue, so that on that side there was practically no adrenal tissue.

DR. YOUNG: Was that metastasis from the rectum?

DR. RICHARDSON: Yes. The left adrenal was slightly enlarged and on section showed two or three small masses of new growth tissue. So far then the lungs, adrenals, retroperitoneal glands, and the cancer of the rectum.

DR. CABOT: There was no discoloration of the skin?

DR. RICHARDSON: I could make out no definite icterus or other discoloration.

DR. CABOT: Or anything to suggest that the adrenals had done the skin any harm?

DR. RICHARDSON: No.

DR. YOUNG: It is presumable that what was left of the left adrenal was sufficient.

DR. RICHARDSON: Yes, we have to say that.

DR. YOUNG: Because occasionally we take out one adrenal and the other is perfectly competent.

DR. CABOT: I think it is surprising how little adrenal we need to run the body.

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LIGHT AND HEALTH

THE efficacy of sunlight in treating or rather in preventing disease has been known somewhat empirically for ages although frequently not carried into effect. Now the value of sunlight and artificial sunlight is known or is in the process of being known scientifically. That sunlight or in its absence its artificial substitute is essential in preventing the development of rickets and bone tuberculosis is now generally recognized. The value of heliotherapy in many diseases of a bodily nature has been proved beyond peradventure.

At the recent meeting of the Royal Institute of Public Health at Brighton, England, Sir Henry Gauvain, the chief medical officer of the Cripples Hospital and College at Alton, near London, read a paper, the joint production of himself and Mr. McRae, on the effect of sun and artificial light treatment on the mentality of patients. He advanced the interesting hypothesis that light represents a kind of "brain food" and supported that view by reference to tests carried out by Mr. C. R. McRae of Melbourne.

According to the experience of Sir Henry Gauvain and Mr. McRae, proofs have been given that not only bacteriological infection is cured, as in the case of tuberculosis, but healthy tissue is actually built up by exposure

of the body to sunlight or artificial sunlight by carefully regulated methods. Similar results have been attained in rickets; not merely has diseased bone been restored to a healthy condition but the growth of new bone to strengthen the wasted tissue has been demonstrated.

The authors of the paper, Sir Henry Gauvain and Mr. McRae, therefore think it is reasonable to suppose that by the use of similar methods other tissues also may be nourished and fortified. Is it not possible that the gray matter of the brain may be improved thereby? Indeed, they go further than suggesting that such may be the case, as they adduce in support of the suggestion the results of experiments, which, they hold, prove that greatly increased mental activity does follow upon exposure to sunlight under properly and scientifically carried out conditions. The workers at Alton observed again and again that sunlight treatment exercised a profound effect on the "spirits" of their patients and served to render them more capable of benefitting by the education provided for them.

Of course, it is not contended that sunlight provokes any fundamental change in the brain for the better, but arouses its innate capacities to greater efforts in the same way as the food of the body, stimulated by sunlight, enables the organism to develop its powers of action.

If these views are confirmed, or even partially confirmed by further investigations, they provide yet another argument in support of the contention that human material is wasted pitifully by the lack of sunlight. It is well known that insufficient sunlight results in stunted bodily growth and in the development of certain diseases.

If to these calamities is to be added a third, impoverishment of mental capacity, then the time is overdue for the abolition of slums and smoke and dirt infested cities.

HOSPITAL CARE FOR CONVALESCENTS

THE gift of one million dollars to St. Luke's Hospital in New York by Mrs. Hicks Arnold for the hospitalization of convalescent patients, will accomplish great good.

Half of the gift is for buildings and the rest for endowment. With few exceptions, such as the Burke Foundation, plans for the care of convalescent patients have previously been employed on a comparatively small scale. Indeed, there has often seemed to be less interest in patients who have passed the stage of acute illness than is for the best interest of all concerned.

It would certainly add to the renown of the medical profession if every patient could be kept under observation and treatment until the resources of science and art had been exhausted. We will concede that occasionally the patients themselves are blameworthy in forsak-

ing too abruptly a hospital or doctor; but there is real pathos in the situation of that other occasional patient who is actually discharged from hospital or personal treatment before completion of recovery. Such patients, suffering with physical weakness, impaired nervous equilibrium, or both, too often drift into a long continuing invalidism, recovery from which may prove quite as much a psychological as a physical problem.

This great gift to St. Luke's will inevitably stimulate other institutions and other individuals to study and meet these problems of convalescence.

Here in Boston Dr. John Bryant has furnished this JOURNAL with a large amount of literature relating to convalescent care, in which he has recorded the conditions in this country and in some other lands. The great pioneer Burke Foundation for Convalescents at White Plains, N. Y., has for ten years been intensely and practically interested in furthering the problems of convalescents, and has given added weight of authority and publicity to the articles by Bryant.

Dr. Bryant's scholarly articles have thus been effectively endorsed elsewhere, yet have appeared to fall on barren ground so far as local recognition is concerned.

We have here in Massachusetts the best possible facilities for the care of acute surgical and acute medical cases. Perhaps there may evenuate the giving of more general attention and a higher grade of care to the imperfectly recovered patient, the convalescent, and the chronic patient, because of this notable leadership and demonstration at St. Luke's.

MISCELLANY

APPOINTMENTS AND PROMOTIONS AT THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH

THE Board of Scientific Directors of The Rockefeller Institute for Medical Research announces the following appointments and promotions:

NEW APPOINTMENTS

Members: Dr. Winthrop J. V. Osterhout, Dr. Florence R. Sabin.

Associates: Dr. Robert T. Hance, Dr. Marian Irwin.

Assistants: Dr. Lawrence W. Bass, Dr. William W. Beattie, Dr. Francis H. Case, Mr. William C. Cooper, Jr., Dr. Charles A. Doan, Dr. Philip Finkle, Mr. Earl S. Harris, Dr. Charles H. Hitchcock, Dr. Philip Levine, Dr. Richmond L. Moore, Dr. Ralph S. Muckenfuss, Dr. Richard E. Shope, Dr. Hans Theiler.

Fellow: Dr. Telemaco S. Battistini.

PROMOTIONS

Fellow to Assistant: Dr. David Davidson, Dr. Philip Reichert.

Dr. Laura Florence, hitherto an Associate in the Department of Animal Pathology, has accepted an appointment as Assistant Professor of Histology and Embryology at the New York Homeopathic Medical College and Flower Hospital.

Dr. Stuart Mudd, hitherto an Associate in Pathology and Bacteriology, has accepted an appointment as Assistant Professor of Experimental Pathology at the Medical School of the University of Pennsylvania, and as Associate in Pathology at the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis.

Dr. Christopher H. Andrews, hitherto an Assistant in the Department of the Hospital, has accepted an appointment as Assistant to Professor Francis R. Fraser, Medical Unit, St. Bartholomew's Hospital, London, England.

Dr. Douglas Boyd, hitherto an Assistant in the Department of the Hospital, has accepted an appointment as Assistant Resident in Surgery at Lakeside Hospital, Western Reserve University, Cleveland, Ohio.

Dr. Arnold M. Collins, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment on the chemical research staff of the E. I. du Pont de Nemours Company, Wilmington, Delaware.

Dr. Robert Elman, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Assistant in Surgery, Department of Surgery, Washington University Medical School, St. Louis, Missouri.

Dr. Joseph H. B. Grant, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as House Officer in Pediatrics at Johns Hopkins Hospital.

Dr. C. Philip Miller, Jr., hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Assistant Professor of Medicine in the Graduate School of Medicine of the University of Chicago.

Dr. Waro Nakahara, hitherto an Assistant in Bio-Physics, has accepted an appointment as Associate Pathologist at the Government Institute for Infectious Diseases, Tokio Imperial University, and Research Associate at the Institute of Physical and Chemical Research of Tokio.

Dr. Everett S. Sanderson, hitherto an Assistant in the Department of Animal Pathology, has accepted an appointment as Assistant Professor of Bacteriology in the Medical School of the University of Virginia.

Dr. David T. Smith, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Pathologist at the New York State Hospital for Incipient Tuberculosis, Ray Brook, New York.

Dr. Elmer L. Straub, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Assistant Resident Pathologist at the University of Louisville, Kentucky.

Dr. Chester M. Van Allen, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Assistant Professor of Surgery in the Graduate School of Medicine of the University of Chicago.

MAINE LEGISLATES AGAINST SPREAD OF VENEREAL DISEASES

As an additional measure for the protection of the community from venereal infection the Eighty-Second Legislature of the State of Maine passed an amendment whereby superintendents of State, county, and municipal charitable or correctional institutions are required to report to the State Department of Public Health any inmate about to be released and who is afflicted with a venereal disease in an infectious form. The report is to be made not later than fourteen days before the estimated date of release, so that the State Department of Public Health may "take necessary measures to protect others from such infection."

It has been generally accepted by the various states, says the U. S. Public Health Service, that provision should be made for the medical examination, care and treatment of venereally afflicted inmates of state institutions, and that such examination, care and treatment are usually provided. The Maine amendment, requiring the report of infectious cases before their release, is a significant venereal disease control measure.—*United States Public Health Service.*

INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA—MEETING IN LONDON

THE first week of June of this year was a great one in the annals of English medical history. The Inter-State Post Graduate Assembly of America, under the leadership of that distinguished surgeon, Dr. Charles H. Mayo of Rochester, held their annual meeting in London.

The assembly, numbering in all some 700 medical men drawn from every State of the Union and Province of Canada, inaugurated the proceedings by meeting in Wigmore Hall, London, on the morning of June 2, under the chairmanship of the Duke of York, the second son of the King, who was supported by the Minister of Health, the Right Hon. Neville Chamberlain, M. P., the president of the Royal College of Physicians, Sir Humphry Rolleston, and the president of the Royal College of Surgeons, Sir John Bland-Sutton.

The American Ambassador, the Hon. Alan B. Houghton, sat at the right of the Duke of York and next to his Excellency was Dr. Mayo.

After the inaugural ceremony Sir Humphry Rolleston read a paper on the etiology and treatment of gall bladder disease. Sir Arbuthnot Lane read a paper on "The First and Last Kink," and said that a quarter of a century had elapsed since he had called the attention of the profession to what he believed to be by far the most evolutionary structure in the human body which had ever been observed and one that could be productive of very disastrous consequences. He found that human anatomy bore a simple, definite, mechanical relationship to its surroundings, and varied rapidly with any change in that relationship. This he had demonstrated in the dissecting room of Guy's Hospital by the examination of the dead bodies of laborers who had been engaged in various arduous occupations, and in their anatomy he was able to determine with absolute accuracy the functions performed during life-time. In his opinion there were two factors in the causation of cancer as they saw it in civilization, namely, the mechanical and the toxic. He had observed cancer imposed on the mechanical and toxic results of chronic intestinal stasis so frequently that he was convinced that the sequence was not a mere chance. He had been equally impressed by the absence, not only of cancer, but of all other direct and indirect results of stasis as seen in civilization in such communities as did not suffer from chronic intestinal stasis. The time had come when the medical profession must study the whole question of chronic intestinal stasis thoroughly and must endeavor by educating the people in proper habits and diet to obviate this acquired state, which might almost be regarded as the normal in civilization.

Sir Thomas Horder dealt with "Some Changes in the Incidence and Course of Common Disease." He pointed out that it was necessary to concentrate more upon the means of raising general resistance to disease and especially of raising nerve-tone. He was inclined to think that they were still fixing their efforts too much upon the bacteriological part of the problem. No amount of bacterio-therapy, however carefully devised and ingeniously carried out, had thus far served to change the dogged course of infective endocarditis nor to avert the almost certain issue. Nor did chemotherapy today offer any better hope. The patients were now being treated on much the same lines as for many years patients suffering from pulmonary tuberculosis had been treated; they were given open air by day and night, sunlight, ample and good food, and general tonic measures, aimed by non-specific means to raise their general resistance, and the response, meagre though it was, was on the whole better than that obtained by the most up-to-date program of bacterio-therapy. Whether they considered the group of modern diseases of functional type or cases of microbic sub-infec-

tion, the moral was one and the same; they ought to do their best to induce their patients to return to a simpler life. They must not only point out more clearly and insistently the importance of hygienic rules for the conduct of the bodily functions, but in the sphere of the intellect, and especially of the emotions, they must preach moderation and simplicity. It was difficult for a clear-thinking doctor to avoid the conclusion that the hustle of modern life, the pace at which we went, the nerve strain involved, and the expense of spirit entailed had become a large factor in the incidence of disease, and of diseases of a different type from many with which he was formerly acquainted. They had new diseases for old and the doctor's function remained the same: to study closely his patient, and husband and exploit to the best all his resources.

Dr. Arthur F. Hurst gave a paper on "Pathogenesis and Treatment of Addison's Anemia and Subacute Combined Degeneration of the Spinal Cord." He detailed the results of recent research work at Guy's Hospital and of the success attending treatment based on these discoveries. He now looked forward to the name "pernicious anemia" disappearing altogether, leaving the disease to be known as Addison's anemia, after the name of the man who, nearly one hundred years ago, gave the first admirable description of the disease.

Dr. Charles Mayo on June 2 distributed the prizes at the London Hospital Medical College. He spoke of the need for cultivating some branch of study as a leisure occupation, and recalled the saying of Francis Bacon that the reason we needed education was to enable us to enjoy our own society. The only real change a man could get was to have a change of occupation which would relax either the mind or body. Youth was the time to select a line of work which would keep one in touch with nature. He pitied the overworked medical student of today. In the last thirty years the world's knowledge had doubled, yet no changes had been made from the earlier lines of study. It had become necessary to split up science into as many sections as possible. Specialism had probably gone too far in medicine. What were wanted today were more of the common or garden variety of doctor. Fortunately those men who had joined the specialist groups in the last twenty years had a fundamental training that was most important. Today they were breaking into special lines of study without having the practical application of the general science of medicine that was needed. The next twenty years must bring back more of the general practitioner.

On June 3 the first paper was by Professor H. MacLean on "Some Aspects of Renal Disease"; the next paper was on "Gastrojejunal Ulcer," by Mr. A. J. Walton. The third paper, by Colonel L. S. Harrison, was on

"The Combating of Venereal Disease in Great Britain by the Free Treatment of the Infected." He said in part that statistics showed that the system of treatment in the past four years had produced good results. New cases of syphilis had declined from 42,805 in 1920 to 22,010 in 1924, and in the same period new cases of gonorrhea had fallen from 40,284 to 31,272. As to the future he would not go so far as to join the optimists in some other countries who predicted that in ten years the scourge would have ceased to exist, but its marked decline in England would fully justify the labor and expense of what was called the "V. D. Scheme."

One of the very best papers was read by Dr. J. Strickland Goodall on the "Heart in Influenza." He said that he was convinced that the etiology of heart disease in England was changing. Up to a few years ago the only antecedent disease to which doctors paid attention in connection with heart trouble was rheumatism in its various forms, and if they found that the patient had suffered from none of those rheumatic ramifications very little heed was paid to any other antecedent illness. In the past few years medical men had been struck by the fact that there were a large number of serious heart cases in which there was no rheumatic history at all, and in which the only illness in the patient's adult life, as far as could be possibly ascertained, was described as influenza. He did not wish them to think that influenza was a poison giving rise to different diseases, but the virus did poison the myocardium and thereby impaired the heart's action. The muscle poison might affect different parts of the heart, causing either heart block, fibrillation or flutter. Time after time in mild cases of influenza the patient had apparently made a good recovery and then "let the doctor down" by developing severe myocardial symptoms. The reason was not difficult to find. These people got gastro-intestinal infection, very often with stomach trouble, very often with nausea and diarrhea, and that was what the doctor treated them for. The symptoms were over in five or six days, and the patient would appear to have made a good recovery. But it took from seven to ten to twelve days for the myocardial symptoms to appear, and it was during this long latent period between the clearing up of the gastro-intestinal symptoms which the patient was aware of, and for which the doctor treated him, and the development of the myocarditis that care had to be taken. Dr. Goodall exhibited chart records of cases of this nature which had come under his charge and indicated that in some instances it had taken several years to restore the heart to its normal action.

Mr. W. Ernest Miles read a paper on "The Pathology and Spread of Cancer of the Rectum," and Mr. T. P. Dunhill one on the sur-

gical treatment of "Auricular Fibulation in Exophthalmic Goitre."

On June 4, Dr Gordon Holmes read a paper on "Certain Symptoms of Suprarenal Disease," Sir Walter F. Fletcher one on "Medical Research in Great Britain," Mr. James Sherren one on "The Choice of Operations in Gastric and Duodenal Ulcer," Sir Sinclair Thomson one on "Cancer of the Larynx," and Dr. H. C. Cameron one on "Some Points in the Treatment of Functional Nervous Disturbances in Children." The paper, however, on which the greatest interest was focussed was that by Lord Dawson of Penn, mainly because he chose a popular subject and one which appealed to the general public. The subject of his paper was "The Speed of Life and Disease." He pointed out what is obvious, that material progress in all that concerned movement had been so rapid that it had outstripped man's rate of adaption. He also pointed out what is equally as obvious, that the future of medicine is preventive. In the future doctors will direct the health of the community rather than spend so much time remedying bad effects. Moreover, they would consider the question of the fitness of the individual for a vocation, and he laid stress on the fact that such work could be done effectively only by the private physician.

AUTOMOBILE FATALITIES JANUARY 1 TO JUNE 20, 1925

THE Department of Commerce announces that reports of automobile fatalities in 1925 have been received from 77 cities of 100,000 population or more. Thirty-eight of these cities show more automobile fatalities in the four-week period ending June 20 than in the previous four-week period. The following four cities show no fatalities for the last eight weeks: Fall River, Lynn, Somerville, and Yonkers, and in addition to these four cities Forth Worth and Nashville show no fatalities for the last four weeks. New Bedford, with only one death, still holds the record for 1925.

For 57 cities with an aggregate population of 27 million, there were 2,093 automobile fatalities reported in the period January 1 to June 20, 1925, as contrasted with 2,016 such fatalities in the period January 1 to June 30, 1923. Of these 2,093 deaths, 417, or 20 per cent., were reported in the four-week period ending June 20, 1925.

Of the 65 cities for which comparisons are possible for the early months of 1923 and 1925, 34 show more automobile fatalities reported in the period January 1 to June 20, 1925, than occurred in the first six months of 1923.

So far this year New York City has reported 425 automobile fatalities, Chicago 254, Philadelphia 116, Los Angeles 108, and Cleveland 104, Boston 60, Bridgeport 6, Cambridge 11,

Fall River 7, Lowell 5, Lynn 3, New Bedford 1, New Haven 13, Providence 40, Somerville 2, Springfield 4, Worcester 8.—*Department of Commerce, Washington.*

DENMARK REDUCES VENEREAL DISEASE

ACCORDING to a recent report by Dr. F. T. H. Wood of the Health Section of the League of Nations Secretariat, syphilis has been reduced in Copenhagen, Denmark, from 8.8 per 10,000 in 1910 to 4.6 in 1922. The rate of infection with gonorrhea also shows a considerable decline.

It is of interest in this connection that Denmark was the first country to introduce legislation dealing with the control of venereal diseases. As early as 1788 the plan of free treatment and compulsory medical care of venereally infected individuals was adopted. Since then the effectiveness of the eradication of syphilis and gonorrhea has been strengthened by limiting medical practice to qualified persons, prohibiting patent medicine advertisements, providing clinical hospital facilities, and establishing the "State Serum Institute," which has for its main functions the laboratory diagnosis of syphilis and the maintenance of a card index of persons so infected.

Denmark has been uniformly successful in the control of venereal diseases, except in two instances. In the sixteenth century, King Christian III issued a decree proclaiming that persons infected with venereal disease were to be refused hospital treatment, so that they might suffer punishment for their immorality. At a later date, venereal disease prevention measures received another setback by the development of a feeling of public apathy, a feeling that enough had already been done, and that a fair degree of safety from the spread of venereal disease was at hand. Both of these instances were followed by an increase in the rate of infection, which in turn awakened a realization of the importance of continued effort in the field of venereal disease control, so that Dr. H. Hausteine, Assistant at the Charite, estimates that during the current first quarter of the present century a decrease in new infections of 33 1/3 per cent. has already taken place in Denmark.—*United States Public Health Service.*

NEW YORK DEPARTMENT OF HEALTH SPONSORS LECTURE SERIES ON SEX EDUCATION AND SOCIAL HYGIENE

THE New York State Department of Health has arranged a series of special lectures to be given throughout the State as a part of its educational work in venereal disease control. These lectures, five in number, are to be delivered by men and women of wide experience and special knowledge in sex education and venereal

diseases. The titles and the aims of the lectures are as follows:

"Social Hygiene Education" presents to parents, educators, welfare workers and civic organizations the possible methods for directing the sex instinct into constructive channels.

"Coaching Your Boy on Life's Problems" is intended to advise fathers on the problem of sympathetic parental guidance of normal adolescent boys.

"The Gift of Sex," a similar lecture for mothers and daughters, deals with the value of sex in the development of the individual, the community and the human race.

"Building for Manhood" aims to give adolescent boys accurate scientific information regarding the sex impulse and to inspire them with ideals of clean, moral living by appealing to their instincts of loyalty, chivalry, and the love for a square deal.

"Building for Womanhood" is the corresponding lecture for girls. It emphasizes the need of sympathetic guidance and training to enable girls to understand and to adapt themselves to the crucial physical, mental and emotional changes.—*United States Public Health Service.*

ALCOHOLIC INSANITY

THIS term, which may not be scientific, conveys an idea of what is meant when used by the State Hospital Commission of New York. A report by this body tends to show that insanity associated with the use of alcohol has tripled in New York State in the five prohibition years.

The figures quoted in the *New York Times* are as follows:

The number of men and women who have become insane through the use of intoxicating liquors since 1920 is shown as follows in the commission's figures:

1920—Men 90 and women 32.

1921—Men 167 and women 26.

1922—Men 194 and women 32.

1923—Men 220 and women 56.

1924—Men 302 and women 71.

The total of 373 cases admitted to State institutions last year was greater than in any year since 1917, when there were 594 new cases.

CORRESPONDENCE

INFANT MORTALITY IN QUINCY

July 7, 1925.

Editor, Boston Medical and Surgical Journal:

I regret that the record of births in Quincy for 1924 was not completed until recently. Otherwise, the infant mortality figures for 1924 would place Quincy second (tie with Berkeley, California) in the mortality report for cities from 50,000 to 100,000 recently published by the American Child Health Association, and quoted in your columns of the issue for July 2, 1925. There were 995 live births in the city and 51

deaths. This gives an infant mortality rate of practically 51 per 1000, the lowest in the history of the city.

Among the 950 registered babies in the child welfare clinics there were three deaths. More than 5000 visits were made to five clinics.

Very sincerely,

EDMUND B. FITZGERALD,

Child Welfare Physician, City of Quincy.

MORPHOLOGY AND HUMAN CONSTITUTION

Editor, Boston Medical and Surgical Journal:

Your editorial in the June 25th number interests me considerably, but I am sorry to see that you misinterpreted my conception of the relationship of morphologic studies to the problem of constitution.

In the second paragraph of your editorial you say that "attention is thus turned more strikingly to the factor of susceptibility and the possibly morphologic reasons for this susceptibility." Then at the end of the third paragraph you say "the value of morphology as a standard or classification of the race may be open to some question."

My feeling about morphology is simply this, that it is a coördinate of susceptibility and expresses genetic results in the individual. Susceptibility to a given environmental menace is consequently a coördinate of morphology, and in this phase expresses likewise genetic results. The possibility of morphologic reasons for susceptibility was a conception advanced by di Giovanni at the University of Padua about 75 years ago. But it is at this point that I have taken issue with di Giovanni's work. We do not develop diseases because we possess a given morphology, but we possess a given morphology, a given psychic pattern, and a special susceptibility, because of definite hereditary factors. It has been exceedingly difficult to get this idea of the coördinate relationships of morphology, psychology and susceptibility expressed in a form which is immediately understood.

The only classification for the race which I advanced in my book was a classification based on differential susceptibility to disease.

You rather surprise me by the two possibilities you mention in your last sentence. As I see it, the first alternative is an absurdity because there is no new thought behind the work which we have been doing at the Constitution Clinic, consequently no question of a discovery enters into the matter at all. The second is equally difficult to understand, in view of the enormous amount of empirical and actual knowledge which has been gathered in the years since Hippocrates on the subject of the variability among all animal forms in their capacity to relate themselves successfully or unsuccessfully to their environment. You may rest assured that I am under no illusions about the expectation of making any discovery for there is none to be made here; nor do I fear the perils of the visionary voyager in hypothetical fields. The study of constitution is the safest, oldest and soundest idea which has come down to us highly modern folks from the most remote ancestors that ever left any records.

Sincerely yours,

GEORGE DRAPEL.

AMERICAN MEDICAL ASSOCIATION

COUNCIL ON PHARMACY AND CHEMISTRY

Editor, Boston Medical and Surgical Journal:

In addition to the articles enumerated in our letter of May 29, 1925, the following have been accepted:

American Chemical Laboratories—

Rhus Tox. Antigen (Strickler)

Rhus Venenata Antigen (Strickler)

Britt, Loeffler & Well—
Loeffund's Malt Extract With Calcium
Loeffund's Malt Extract With Cod Liver Oil

Lederle Antitoxin Laboratories—
Scarlet Fever Streptococcus Antitoxin (Unconcentrated)

Wm. S. Merrell Co.—
Pituitary Extract (Obstetrical)—Merrell
Pituitary Extract (Surgical)—Merrell

H. K. Mulford Co.—
Lamb's Quarters Pollen Extract—Mulford Treatment Sets
Scarlatinal Antitoxin (Unconcentrated)—Mulford

Parke, Davis & Co.—
Tuna Fish Protein Diagnostic—P., D. & Co.

Frederick Stearns & Co.—
Insulin—Stearns, 80 Units, 5 c.c.
Insulin—Stearns, 80 Units, 10 c.c.

Winthrop Chemical Co.—
Solarson

Yours truly,

W. A. PUCKNER, Secretary,
Council on Pharmacy and Chemistry.

VIENNA LETTER

(From Our Regular Correspondent)

Vienna, June 12, 1925.

THE SPREAD OF INSANITY

In a popular lecture held in the Hygienic Exhibition, Dr. Paul Singer, teacher of hygiene, said that there is no disease concerning which people, in general, are so ignorant, so indifferent, and have so many false ideas as they have about insanity.

A long study of the disease has led him to form some important conclusions: That nearly all insanity is, in the first instance, the result of some form of self-indulgence, of some want of self-restraint, or of the gradual centering of all the thoughts and emotions on self alone, and therefore that nearly all insanity is, in the first instance, preventable. That each one of us can help to prevent it, and therefore that each one of us has a responsibility in this matter which we dare not ignore.

The most prevalent idea is that insanity concerns only the mind and not the body. Insanity is the outcome of pathological changes in the brain. It is, therefore, as truly a disease of the body as consumption or smallpox, of which there is no more unmistakable proof than the fact that insanity is largely affected by such bodily conditions as want of nourishment and want of sleep. There are even yet some who look upon insanity as a mysterious visitation of Providence, or a visible punishment for sin. Leading neurologists opine that insanity is both a visitation of Providence and a punishment for sin, in this sense that it is the direct result of the violation of those laws of nature which are proofs of Providence and a standard of righteousness.

The insidious beginnings of insanity are the emotions and thoughts that continually run unchecked through the brain. Thoughts and emotions, like other natural forces, follow the line of least resistance. Where the little stream can flow unchecked it will dig itself a channel, at the same time continually wearing away the earth and rocks in its course. So, also, that unchecked current of thought or emotion, always in one groove, always on one subject, must of necessity wear for itself a channel at the expense of the proper function of the brain.

Many persons are practically insane long before it is apparent even to those who live with them, be-

cause they retain the life-long habit of outward self-restraint long after they have lost the power of inward self-restraint. This outward barrier, however, is weak indeed, without any inward support, and a sudden shock to the nerves, or a severe strain upon them, will probably break them down.

The greater part of the prevalent insanity is caused by self-absorption as well as self-indulgence. A person who can use only one part of his brain is as much an invalid as he who can use only one leg. A self-absorbed and narrow-minded person is much more likely to become insane than a person who cultivates wide sympathies, and whose thoughts are occupied with the needs of others and with active work for the service of mankind. The chief preventives of insanity are self-forgetfulness and self-control—not merely outward decorum and propriety of behavior, but true, inward self-restraint, constantly exercised by reason and judgment over impulse and emotion.

The fact that a tendency to insanity is inherited does not lessen but rather increases our responsibilities. The causes of its spread were so summarized:

(1) That those who inherit this predisposition do not know how to counteract its effect in themselves and to avoid transmitting it beyond their own generation. (2) The intermarriage of cousins. (3) The utterly reckless and sinful marriages of those whose parents are insane, or who have even themselves had attacks of insanity.

The general method of treating those who are probably disposed to insanity is completely wrong. If a child whose parents or near relatives are insane is observed to be unnaturally excitable and sensitive, or extraordinarily given to outbursts of sudden and violent anger, or is subject to fits of any kind, he is, as a rule, beyond redemption. It is supposed, quite wrongly, that it is both cruel and dangerous to thwart him and that discipline will only aggravate his incipient disease. Consequently he is indulged, yielded to, pitied and petted, so that he never has a chance of acquiring stability of intellect which is lacking in him.

We have the remedy largely in our own hands. By preventing marriage among those obviously predisposed to, or who have actually been afflicted with insanity, and by training those in our charge to exercise self-control, much may be done to eliminate this awful disease.

THE SECRET OF LASTING YOUTH

Dr. Eisenhuth lectured likewise in the Hygienic Exhibition, on the above subject. He dealt with the preservation of activity of mind and body in those who are approaching old age. According to his conception, diet has a lot to do with it. He said that in respect to diet it is universally admitted that after middle age the amount of food taken should be less than before that time, and the changes in diet should be rather to use less of the structure-forming materials, though not always to exclude them. Again, there should be used relatively little—indeed, as little as possible—of stimulating articles of food, which meet the desires of the appetite rather than of necessity. In short, the simple rule should be observed of eating no more than a perfectly normal appetite craves, and as little as possible of those things taken because they are agreeable.

As the period of old age is reached—by which is meant about 65 years—the regimen should be markedly simplified, and always taken with deliberation. Bread, milk and fruits are the most beneficial foods in old age. The tendency of old people to stay indoors should be discouraged, and too much heavy clothing must not be worn. The idea that old people should live as much like vegetables as possible, taking no exercise whatever, is an erroneous one, and, as Dr. J. M. Taylor has pointed out, makes for premature decay. These experiences and convictions in this

particular seem fortified by the best authorities consulted. The disinclination to movement and effort is rather the result of under-oxygenation, a habit, or other conditions which make for what one may almost call senile laziness, than an instinctive economic impulse. Even heart weakness is no reason for complete inaction. The real curative remedy for all the stiffness, digestive troubles, and other discomforts and sense-deficiencies in old age is the encouragement of healthy exercise and selected diet adapted to meet the natural functions of the various organs.

AMBIDEXTERITY

A lecturer, teacher in a secondary school, spoke on ambidexterity. He argued that children of whatever rank should be taught to use the left hand as well as the right. For the working classes and all who get their living by manual labor, ambidexterity is an obvious necessity and needs no lengthy argument to prove. Without it the sailor would be of little use and his life in constant danger, a weaver would be unable to do his work and earn his bread, while a builder or mechanic would be handicapped most severely, for it constantly happens that work cannot be easily, if at all, carried out by the right hand. In cleaning windows, scrubbing floors, and all rough work not demanding much skill, teachers and mistresses should insist on those performing such acts using their left hands whenever the work is done on the left side of the person so engaged. In fact, all workers should be taught and encouraged to use their left hands whenever the work can be done as well as, or better and easier than, by the right hand. Providence has endowed us with two hands and it is foolish to deliberately minimize that boon. If especial delicacy of the right hand be needed, as by artists, the left hand should be taught to do the rough work; if, as in piano playing, both hands are required to do skilled work, both should receive due training; and without any special occupation, it is well to have the left hand trained to use, both in everyday life and in any special emergency.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING JULY 4, 1925

Anterior poliomyelitis	1	Ophthalmia neonatorum	15
Chickenpox	69	Pellagra	1
Diphtheria	79	Pneumonia, lobar	31
Dog-bite requiring anti-rabic treatment	8	Scarlet fever	82
Encephalitis lethargica	1	Septic sore throat	5
Epidemic cerebrospinal meningitis	3	Syphilis	47
German measles	83	Tetanus	2
Gonorrhea	69	Trachoma	2
Influenza	4	Tuberculosis, pulmonary	97
Measles	322	Tuberculosis, other forms	18
Mumps	20	Typhoid fever	6
		Whooping cough	113

RHODE ISLAND STATE BOARD OF HEALTH

COMMUNICABLE DISEASES REPORTED FOR WEEK ENDING JUNE 27, 1925

Diphtheria	5	Typhoid fever	2
Measles	23	Chickenpox	6
Mumps	4	Whooping cough	2
Septic sore throat	4	Smallpox	6
Pneumonia	1	Poliomyelitis	1
Scarlet fever	4		

CONNECTICUT DEPARTMENT OF HEALTH

WEEKLY MORBIDITY REPORT FOR THE WEEK ENDING JUNE 27, 1925

Diphtheria	18	Encephalitis epid.	1
Last week	32	German measles	3
Diphtheria bacilli carriers	5	Influenza	1
Whooping cough	95	Malaria	1
Last week	75	Mumps	5
Scarlet fever	25	Pneumonia (broncho)	12
Last week	39	Pneumonia (lobar)	14
Measles	193	Tuberculosis (pul.)	40
Last week	163	Tuberculosis (other forms)	5
Typhoid fever	3	Gonorrhea	25
Last week	4	Syphilis	16
Chickenpox	17		

MORBIDITY REPORT FOR THE WEEK ENDING JULY 3, 1925

Diphtheria	13	Conjunctivitis inf.	1
Last week	18	Encephalitis epid.	1
Diphtheria bacilli carriers	4	German measles	7
Whooping cough	81	Influenza	4
Last week	95	Malaria	4
Scarlet fever	18	Mumps	6
Last week	25	Pneumonia (broncho)	7
Measles	141	Pneumonia (lobar)	4
Last week	195	Tuberculosis (pul.)	19
Typhoid fever	1	Tuberculosis (other forms)	2
Last week	3	Gonorrhea	32
Chickenpox	16	Syphilis	34

NEWS ITEMS

APPOINTMENT OF DR. OVERHOLSER—On July 1, 1925, Dr. Winfred Overholser was appointed director of the Division for the Examination of Prisoners of the Department of Mental Diseases, succeeding Dr. Ralph M. Chambers, recently appointed superintendent of the Taunton State Hospital.

KIWANIS CLUB HEALTH CAMP—The Kiwanis Club of Pittsfield is conducting a day health camp during July and August, at which 40 boys alternate with 40 girls for two-week periods.

DR. MANN, EX-PRESIDENT OF THE MAINE MEDICAL ASSOCIATION, IMPROVING—A brief account of the severe injury suffered by Dr. Frederick W. Mann on his way to preside over the sessions of the Maine Medical Association appeared in our issue of July 2.

Dr. Bryant, Secretary of the Association, informs us that Dr. Mann had five ribs and a collar bone broken and gave evidence of internal injuries. He was in a serious condition after the accident, but seems to be on the road to recovery at time of this writing.

ASSOCIATION OF AMERICAN PHYSICIANS—At the annual meeting of the Association of American Physicians, held in Washington on May 5-7, the following officers were elected: Dr. Richard P. Strong, president; Dr. Francis W. Peabody, secretary; Dr. Thomas McCrae, elected councillor to fill the vacancy in the Council.

AMERICAN BOARD OF OTOLARYNGOLOGY—An examination was held by the American Board of Otolaryngology on May 26, 1925, at the Medico-Chirurgical Hospital, Philadelphia, with the following result: Passed, 137; failed, 20; total examined, 157.

The next examination will be held at the University of Illinois School of Medicine on October 19, 1925. Applications may be secured from the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Mo.

SIR AUKLAND GEDDES ASSUMES LEADERSHIP OF SOCIAL HYGIENE COUNCIL—Sir Auckland Geddes, former British ambassador to the United States, has accepted the presidency of the British Social Hygiene Council. As Sir Auckland Geddes is already president of the Society for the Prevention of Venereal Disease, it is anticipated that, if the present efforts are continued and extended, venereal diseases in England will be reduced to a minimum.—*United States Public Health Service.*

NOMINATION TO BOARD OF REGISTRATION—The Governor of the Commonwealth, in the nomination of Dr. Charles P. Sylvester to be a member of the Board of Registration in Medicine, made an excellent selection. Unfortunately the nominee is probably ineligible because the law provides that not more than three members of the Board may belong to any chartered medical society.

A year ago the Recess Committee of the Legislature recommended the repeal of this provision, which, they pointed out, serves no useful purpose at present. The Legislature did not adopt the recommendation of their Committee.

It is to be hoped that at the next session the simple steps will be taken which will leave the Governor free to select the best men for this important Board.

NOMINATED BY GOVERNOR—Henry L. Houghton, M.D., of Boston, has been nominated by the Governor to the Board of Registration in Medicine, and Charles W. Hutchinson, M.D., of Concord, as associate medical examiner of the Sixth District.

NOTICE

THE BOSTON FLOATING HOSPITAL

"THE Boston Floating Hospital opened its 32nd season on June 30th. A new departure has been made this year in accepting certain selected orthopedic cases for intensive heliotherapy. Any physicians having suitable cases can obtain further information by communicating with the Resident Physician by telephone, Richmond 4103."

SOCIETY MEETINGS

NEW ENGLAND STATE MEDICAL SOCIETIES

The annual meetings of the New England State Medical Societies are scheduled as follows:
Vermont State Medical Society—St. Johnsbury, Oct. 15-16, 1925.

BOSTON MEDICAL LIBRARY

RECENT ACCESSIONS

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Stiles, P. G. Nutritional physiology. 5 ed. Phila., Saunders, 1924.
Stoekel, W., and Reifferscheid, K. Lehrbuch der Gynäkologie. Lpz., Hirzel, 1924.
Strümpell, A. Aus dem Leben eines deutschen Klinikers. Lpz., Vogel, 1925.
Trelease, S. F., and Yule, E. S. Preparation of scientific and technical papers. Balt., Williams, 1925.
Ulrich, H. Diagnostik und Therapie der Lungen- und Kehlkopftuberkulose. Berl., Springer, 1924.
Urologische Operationslehre. Hrsg. von F. Voelcker und E. Wossidlo. 2 ed. Lpz., Thieme, 1924.
Vesalius, A. Suorum de humani corporis fabrica librorum epitome. Basilæ (1543).
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BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

- Hand-Atlas of Clinical Anatomy. By A. C. Eycleshymer and Tom Jones. Philadelphia and New York: Lea & Febiger. 424 pages. Price, \$11.
- Pneumonia: Its Pathology, Diagnosis, Prognosis and Treatment. By the late R. Murray Leslie. Edited and revised by J. Browning Alexander. London: William Heimemann, Ltd. 351 pages. Price, 12/6 net.
- Internal Secretion and the Ductless Glands. By Swale Vincent. New York: Physicians and Surgeons Book Company. 463 pages.
- Cancer and the Public. By Charles P. Child. New York: E. P. Dutton & Co. 267 pages. Price, \$4.25.
- Injuries of the Wrist: A Radiological Study. By Dr. Etienne Destot of Lyons. Translated by F. R. B. Atkinson, M.D., C.M. London: Ernest Benn, Ltd. 176 pages. Price, 18/ net.
- International Clinics. Vol. II, 35th series, June, 1925. Edited by Henry W. Cattell, A.M., M.D., with the collaboration of Charles H. Mayo, M.D. Philadelphia and London: J. B. Lippincott Company. 311 pages.
- Human Physiology. Fourth edition. By Percy G. Stiles. Philadelphia and London: W. B. Saunders Company. 435 pages. Price, \$2.25.
- History of the Canadian Forces in the Great War. 1914-19. The Medical Services. By Sir Andrew Macphail. Department of National Defence. 428 pages.
- The Conquest of Cancer. By H. W. S. Wright. New York: E. P. Dutton & Co. 82 pages. Price, \$1.
- The Personal Equation. Louis Berman. New York City: The Century Co. 303 pages. Price, \$2.50.
- The Science of Biology. By George G. Scott. New York: Thomas Y. Crowell Co. 617 pages. Price, \$3.50.
- Approaching Motherhood. Questions and Answers of Maternity. By George L. Brodhead. New York: Paul B. Hoeber, Inc. 193 pages. Price, \$1.25.
- Modern Surgery. General and Operative. By J. Chalmers DaCosta. Ninth edition. Philadelphia and London: W. B. Saunders Co. 1527 pages. (1200 illustrations.) Price, \$10.
- Collected Papers of the Mayo Clinic, Rochester, Minn. Edited by Mrs. M. H. Mellish. Vol. XVI, 1924. Philadelphia and London: W. B. Saunders Co. 1331 pages. Price, \$13.
- The Surgical Clinics of North America. (New York Number.) Vol. V, No. II, April, 1925. Philadelphia and London: W. B. Saunders Co. 337 pages. Price per year: Paper, \$12; cloth, \$16.
- Pediatrics. Edited by Isaac A. Abt. Vol. VII. Philadelphia and London: W. B. Saunders Co. 879 pages. Price, \$10. (Sold by subscription.)

"Diseases of the Heart." By HENRI VAQUEZ. Paris. Translated and edited by George F. Laidlaw, M.D., New York. Introduction by William S. Thayer, M.D., Baltimore. Illustrated. Published by W. B. Saunders Company, Philadelphia and London, 1924. 743 pages.

This volume by the most prominent authority on heart disease today in France is representative of the views on this important subject held by the best clinicians of the modern French school. In general the book has been entertainingly and well written and the translator has obviously accomplished his task excellently.

It is difficult to cover such a subject as this one in every detail with complete satisfaction; in fact it is probably impossible. So here as elsewhere one is occasionally disappointed. The work can be recommended but not without reservations.

To the reviewer the historical surveys and the frequent references to the author's long clinical experience have been of especial interest and value. Such chapters as the historical introduction and those on radiology, blood pressure, mechanical pulse tracings, hypertension, pericarditis and heart failure are excellent, but other chapters like those on auscultation, electrocardiography, mitral stenosis, and the use of drugs are somewhat weak and disappointing. As compared with other works on heart disease, however, this volume proves at least the equal of the best and the superior of most. Its greatest value lies in the fact that it is primarily a record of the long experience and sound opinions of a single individual of unquestioned ability. As such a record the book should be consulted by every physician interested in heart disease.

In conclusion brief quotations from the prefaces both by the translator and by the author are instructive. Dr. Laidlaw writes, "This book was written for the general practitioner by the foremost cardiologist of France. Throughout Latin Europe it has already become the most popular textbook on diseases of the heart. The book is especially rich in radioscopic studies, for which the clinic of Vaquez and Bordet has long been famous. When the publication of this American edition was assured, Professor Vaquez wrote: 'Two years is a long time in the evolution of medical science. Some of the chapters are already old. I shall rewrite them. Others require additions to bring them up to date.' Thereupon he undertook a thorough revision of the book."

Professor Vaquez in asking himself why he has been "thought worthy" of preparing an edition of his work for publication in America writes, "Perhaps because faithful to the traditions of French medicine, I have never turned away from the bedside of the patient, for I hold the laboratory methods not as an end but as a means of solving the problems raised in the clinic; perhaps because I have tried to be clear, believing that there is no subject so dry that it cannot be understood by all if it is properly presented. A last reason, probably the most important in the eyes of our American colleagues, is that I have tried to make a personal book. In fact, this has been my chief purpose. Initiated early by my master, Potain, in the problems presented by diseases of the heart I have never ceased to study them. With age, having acquired some experience, I trust that it is not indiscreet to share with my contemporaries the lessons learned by long and patient observation."